Micro System MC-50/22/37

Service
Service
Service

Service Manual

COMPACT
disc
DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

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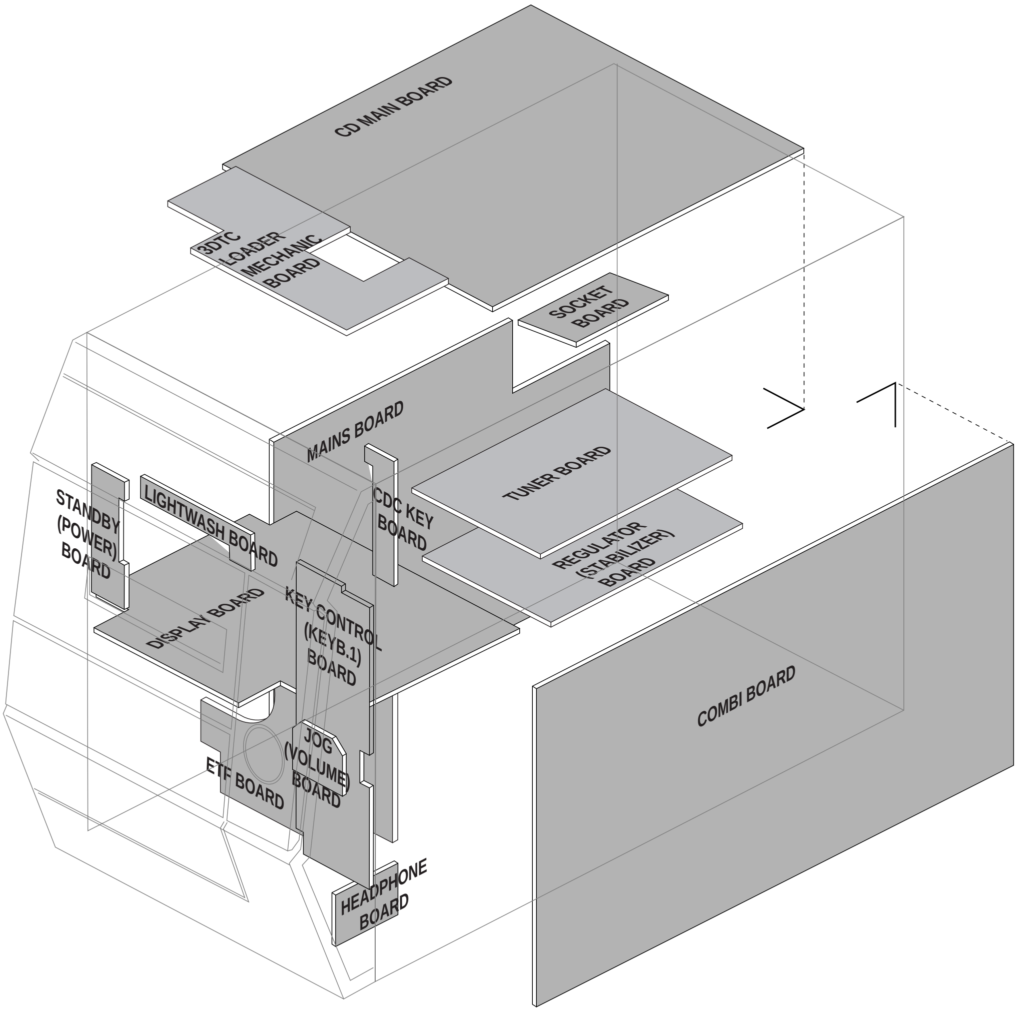
GB 3139 785 22710

PHILIPS

LOCATION OF PC BOARDS


CD MAIN BOARD
3DTC LOADER MECHANIC BOARD
SOCKET BOARD
MAINS BOARD
TUNER BOARD
STANDBY (POWER) BOARD
LIGHTWASH BOARD
CDC KEY BOARD
REGULATOR (STABILIZER) BOARD
DISPLAY BOARD
KEY CONTROL (KEYB.1) BOARD
COMBI BOARD
JOG (VOLUME) BOARD
ETF BOARD
HEADPHONE BOARD

VERSION VARIATIONS:

Type /Versions:	MC-50							
Features & Board in used:	/22	/37						
Incredible Surround	x	x						
Karaoke								
News	x							
RDS	x							
Rotary Encoder (volume control)	x	x						
Jog Shuttle								
Voltage Selector								
Aux Input	x	x						
Digital Output	x	x						
Headphone Socket	x	x						
Line Output								
Subwoofer Output	x	x						
Surround Output								
Matrix Surround Loudspeakers								
Normal Standby with Clock Display	x	x						
ECO Power (LPS or Low Power Standby)	x							
ECO6 Tuner board - System Non-Cenelec		x						
ECO6 Tuner board - System Cenelec	x							

SPECIFICATIONS

GENERAL:
Mains voltage : 120V for /37
220-230V for /22
Mains frequency : 50/60Hz
Power consumption : < 15W at Standby (Demo off)
< 1W at Eco Power Standby /22
< 66W Active
Clock accuracy : < 4 seconds per day
Dimension centre unit : 175 x 244 x 322mm

TUNER:
FM
Tuning range : 87.5-108MHz
Grid : 50kHz
100kHz for /37
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75Ω coaxial
300Ω click fit for /37
Sensitivity at 26dB S/N : < 7µV
Selectivity at 600kHz bandwidth : > 25dB
Image rejection : > 25dB
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 8µV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW
Tuning range : 531-1602kHz
530-1700kHz for /37
Grid : 9kHz
10kHz for /37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5%

LW
Tuning range : 153-279kHz for /22
Grid : 3kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : [< 6.0mV/M]
Selectivity at 18kHz bandwidth : [> 24dB]
IF rejection : [> 45dB]
Image rejection : [> 30dB]
Distortion at RF=50mV, m=80% : [< 5%]

AMPLIFIER:
Output power : 2 x 25W RMS 1) /22
2 x 20W FTC 2) /37
Frequency response within -3dB : 50Hz-16kHz
Treble control : 12.5kHz ± 3 steps 3)
Bass control : 55Hz ± 3 steps 3)
Incredible Sound : ON/OFF 3)
Headphone output at 32Ω : 680mV ± 1dB
Sub-woofer output : 1.5V ± 3dB at 22kΩ
Digital output (IEC958, 44.1kHz) : 0.5Vp-p
Aux / CDR input : 500mV / 1V ± 2dB at 600Ω

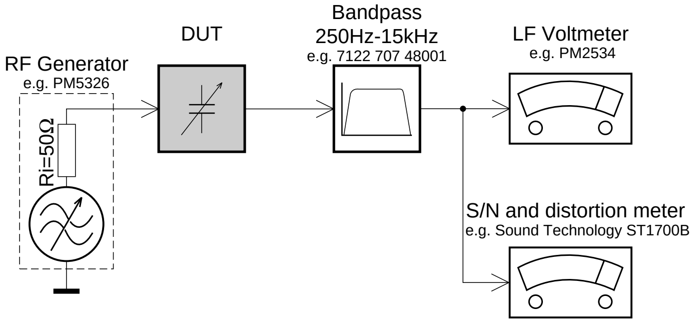
CASSETTE RECORDER:
Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec ± 2%
Wow and flutter : < 0.4% DIN
Fast-wind/rewind time C60 : 130 sec
Bias system : 75kHz ± 10kHz
Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz
Signal to noise ratio Type I : > 48dBA
Type II : > 52dBA

COMPACT DISC:
Measurement done at output conn. of the 3DTC module.
Frequency response within +0/-2dB: 20Hz - 20kHz
Output level (in Vrms) : 550mV, Z_{out} = 100Ω
Signal/Noise ratio (A-weighted) : > 76dBA
Distortion at 1kHz : < 0.02%
Channel unbalance at 1kHz : ±1dB
Channel separation at 1kHz : > 79dB
De-emphasis : Switched by subcode on the disc

[....] Values indicated are for "Cenelec version" only
1) 6Ω, 1kHz, 10% THD
2) 6Ω, 60Hz - 12,5kHz, 10% THD
3) Frequency response in each setting is software controlled.

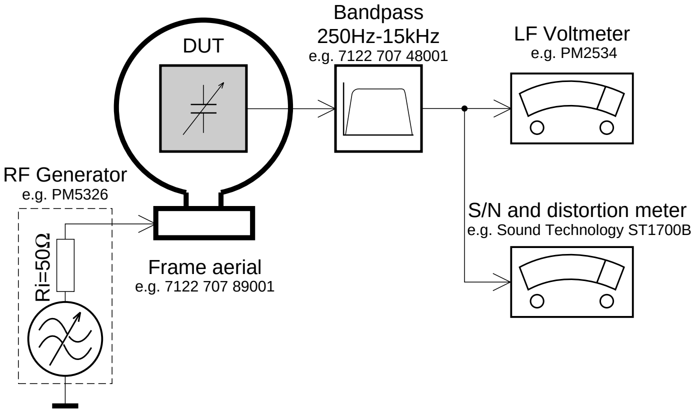
MEASUREMENT SETUP

Tuner FM


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

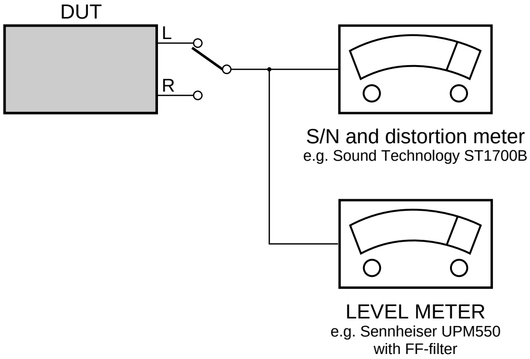
Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B
Frame aerial
e.g. 7122 707 89001

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

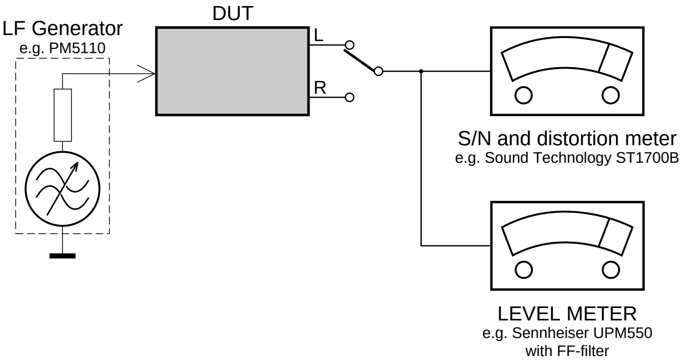
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)


DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071


LF Generator
e.g. PM5110
DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Cassette:

SBC419 Test cassette CrO2	4822 397 30069
SBC420 Test cassette Fe	4822 397 30071
MTT150 Dolby level 200nWb/M	4822 397 30271

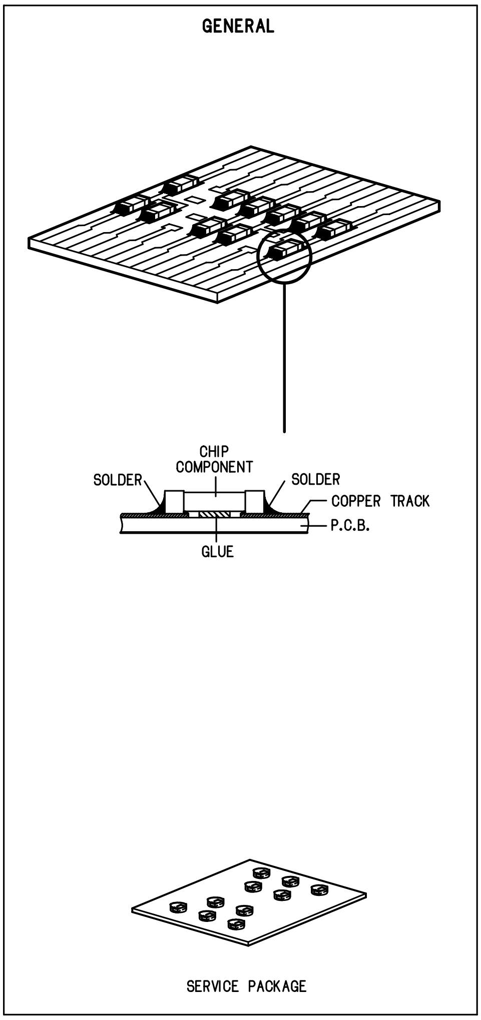
Compact Disc:

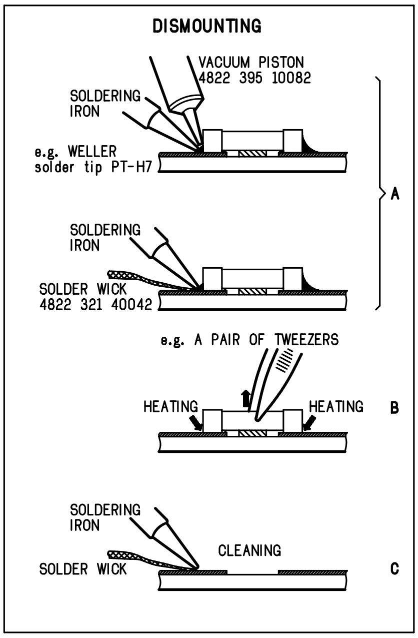
SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

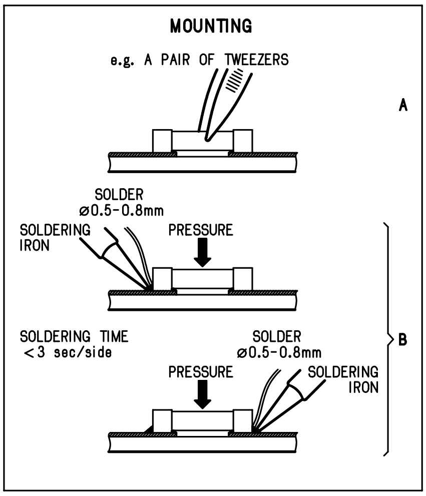
ESD Equipment:

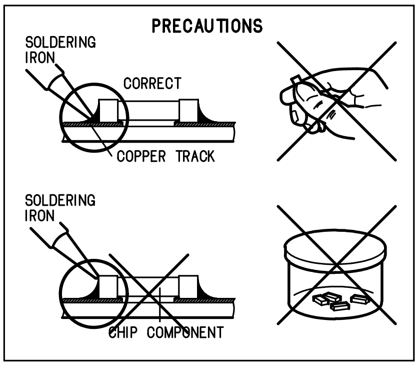
Anti-static table mat - large 1200x650x1.25mm	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1MΩ)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

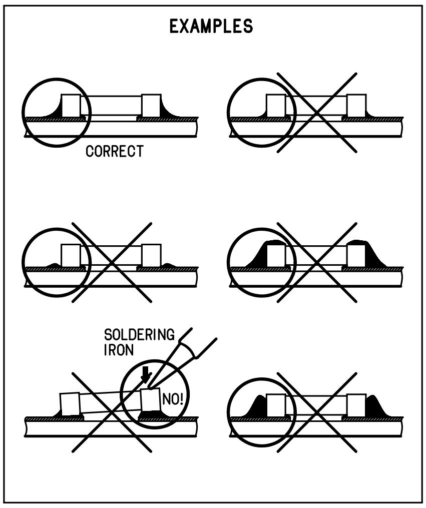
HANDLING CHIP COMPONENTS


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE

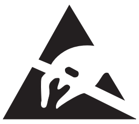

DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
A
SOLDERING IRON
SOLDER WICK
4822 321 40042
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
CLEANING
SOLDER WICK
C


MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
⌀0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
<3 sec/side
SOLDER
⌀0.5-0.8mm
PRESSURE
SOLDERING IRON
B


PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT


EXAMPLES
CORRECT
SOLDERING IRON
NO!

ESD



GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

CLASS 1
LASER PRODUCT
3122 110 03420

GB Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

S Varning !

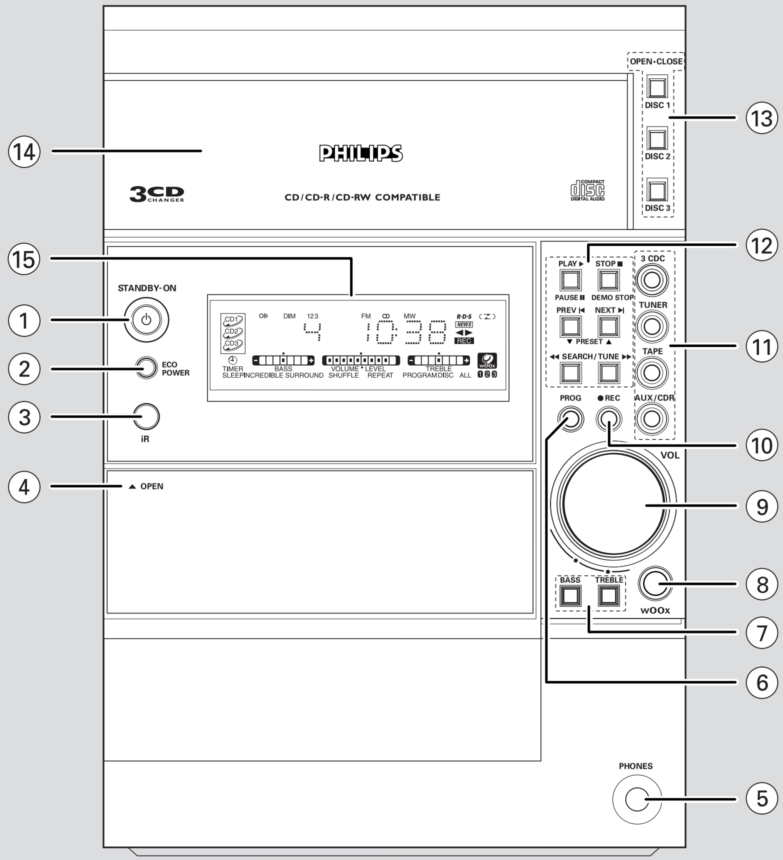
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.


PHILIPS
3CD CHANGER
CD/CD-R/CD-RW COMPATIBLE
OPEN•CLOSE
DISC 1
DISC 2
DISC 3
STANDBY-ON
ECO POWER
iR
OPEN
PLAY
STOP
PAUSE
DEMO STOP
PREV
NEXT
PRESET
SEARCH/TUNE
PROG
REC
3 CDC
TUNER
TAPE
AUX/CDR
VOL
BASS
TREBLE
wOOx
PHONES
⑭
⑮
①
②
③
④
⑬
⑫
⑪
⑩
⑨
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⑦
⑥
⑤

English

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General Information

This product complies with the radio interference requirements of the European Community.

Environmental Information

All unnecessary packaging has been omitted. We have tried to make the packaging easy to separate into three materials: cardboard (box), polystyrene foam (buffer) and polyethylene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialised company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Acknowledgement

Energy Star
As an ENERGY STAR® Partner, Philips has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.

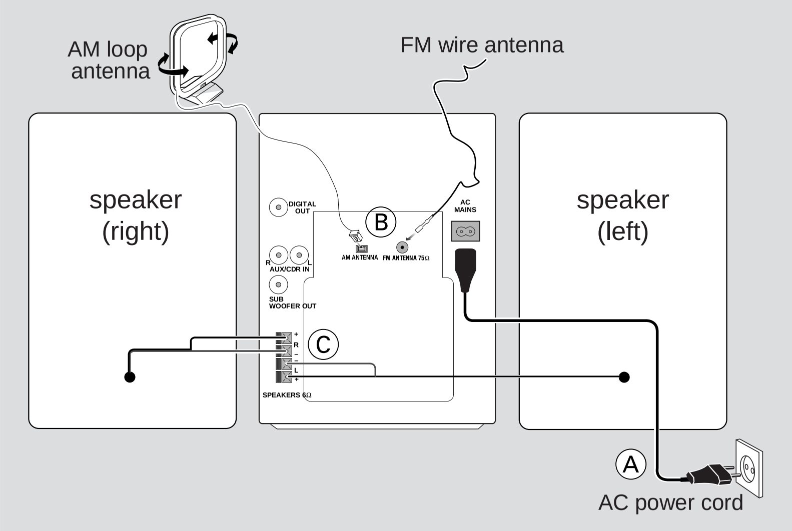
Supplied accessories

- Remote control
- Batteries (two AA size) for remote control
- AM loop antenna
- FM wire antenna
- AC power cord

Safety Information

- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer.
- Place the system on a flat, hard and stable surface.
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system. Allow at least 10 cm (4 inches) clearance from the rear and the top of the unit and 5 cm (2 inches) from each side.
- Do not expose the system, batteries or discs to excessive moisture, rain, sand or heat sources caused by heating equipment or direct sunlight.
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the disc unit inside the system. Should this occur, the CD player would not operate normally. Leave the power on for about one hour with no disc in the system until normal playback is possible.
- The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated.
- **When the system is switched to Standby mode, it is still consuming some power. To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

Preparations



Rear Connections

The type plate is located at the rear of the system.
For users in the U.K.: please follow the instructions on page 2.

Ⓐ Power

Before connecting the AC power cord to the wall outlet, ensure that all other connections have been made.

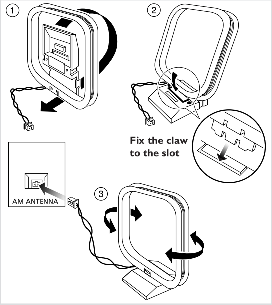
WARNING!
– For optimal performance, use only the original power cable.
– Never make or change connections with the power switched on.

To avoid overheating of the system, a safety circuit has been built in. Therefore, your system may switch to Standby mode automatically under extreme conditions. If this happens, let the system cool down before reusing it *(not available for all versions)*.

Ⓑ Antennas Connection

Connect the supplied AM loop antenna and FM antenna to the respective terminals. Adjust the position of the antenna for optimal reception.

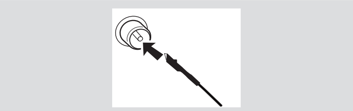
AM Antenna



- Position the antenna as far as possible from a TV, VCR or other radiation source.

Preparations

FM Antenna

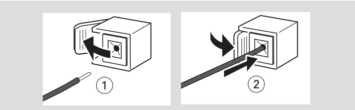


- For better FM stereo reception, connect an outdoor FM antenna to the FM ANTENNA terminal.

Ⓒ Speakers Connection

Front Speakers

Connect the speaker wires to the SPEAKERS (FRONT) terminals, right speaker to "**R**" and left speaker to "**L**", coloured (marked) wire to "+" and black (unmarked) wire to "−".



- Clip the stripped portion of the speaker wire as shown.

Notes:

– For optimal sound performance, use the supplied speakers.
– Do not connect more than one speaker to any one pair of +/− speaker terminals.
– Do not connect speakers with an impedance lower than the speakers supplied. Please refer to the SPECIFICATIONS section of this manual.

Optional Connections

The optional equipment and connecting cords are not supplied. Refer to the operating instructions of the connected equipment for details.

Subwoofer Out Connection

Connect the subwoofer to the **SUBWOOFER OUT** terminal. The subwoofer reproduces just the low bass sound effect (explosions or the rumble of spaceships, for example).

Connecting other equipment to your system

Connect the audio left and right OUT terminals of a TV, VCR, Laser Disc player, DVD player or CD Recorder to the **AUX/CDR IN** terminals.

Note:

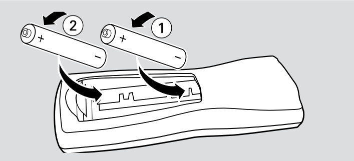
– If you are connecting equipment with a monaural output (a single audio out terminal), connect it to the AUX/CDR IN left terminal. Alternatively, you can use a "single to double" cinch cable (still be mono sound).

Digital Out Connection

Connect this digital output when recording on any audio equipment with digital input (CD Recorder, Digital Audio Tape [DAT] deck, Digital to Analogue Converter and Digital Signal Processor, for example). Use a cinch cable to connect the **DIGITAL OUT** terminal to the digital input terminal of the equipment.

Inserting batteries into the Remote Control

Insert two batteries (Type R06 or AA) into the remote control with the correct polarity as indicated by the + and − symbols inside the battery compartment.



CAUTION!

– Remove batteries if they are exhausted or not to be used for a long time.
– Do not use old and new or different types of batteries in combination.
– Batteries contain chemical substances, so they should be disposed off properly.

Controls *(main system's illustration on page 3)*

Controls on the system and remote control

① **STANDBY ON ⏻**
– to switch the system on or to Standby mode.

② **ECO POWER**
– to switch the system on or to Eco Power Standby mode.

③ **iR**
– infrared sensor for remote control.

④ **▲ OPEN**
– to open the tape deck door.

⑤ **PHONES**
– to connect headphones.

⑥ **PROG (PROGRAM)**
for CD .... to programme disc tracks.
for TUNER .... to programme preset radio stations.
for CLOCK .... to select 12- or 24-hour clock mode.

⑦ **BASS/TREBLE**
– to select BASS or TREBLE sound feature.
BASS/TREBLE +/− *(on the remote control)*
– to increase or decrease the low or high tone level for the respective BASS or TREBLE sound feature selected.

⑧ **wOOx** *(for model MC-70 only)*
– *(on the system only)* to select the next wOOx level or switch off wOOx sound effect.
– *(on the remote control only)* to switch on or off the wOOx sound effect.
wOOx LEVEL
– *(on the remote control only)* to select desired wOOx level : WOOX 1, WOOX 2 or WOOX 3.

⑨ **VOL (VOLUME +/−)**
– to increase or decrease the volume.
– *(on the system only)* to increase or decrease the low or high tone level for the respective BASS or TREBLE sound feature selected.

⑩ **● REC**
– to start recording on a tape.

⑪ **SOURCE** – to select the following:
3CDC (CD 123)
– to select disc tray 1, 2 or 3.
TUNER
– to select waveband : FM, MW or LW.
TAPE
– to select tape mode.

AUX / CDR
– to select a connected external source : CDR or AUX (auxiliary) mode.

⑫ **Mode Selection**
PLAY PAUSE ▶II
for CD .... to start or interrupt playback.
for TAPE .... to start playback.
for PLUG & PLAY…*(on the system only)* to initiate and start plug & play mode.
STOP/DEMO STOP ■
for CD .... to stop playback or to clear a programme.
for TUNER .... to stop programming.
.... *(on the system only)* to delete the preset radio station.
for TAPE .... to stop playback or recording.
for DEMO .... *(on the system only)* to activate/deactivate the demonstration.
for CLOCK .... to exit clock setting or cancel timer.
for PLUG & PLAY…*(on the system only)* to exit plug & play mode.
PREV / NEXT ⏮ ⏭ (PRESET ▼▲)
for CD .... to skip to the beginning of the current, previous, or next track.
for TUNER .... to select a preset radio station.
for TAPE .... to select tape side (back or front).
for CLOCK .... to set the minute.
SEARCH / TUNE ◀◀ ▶▶
for CD .... to search backward/forward.
for TUNER .... to tune to a lower or higher radio frequency.
for TAPE .... to rewind or fast forward.
for CLOCK .... to set the hour.

⑬ **OPEN•CLOSE (DISC 1/DISC 2/DISC 3)**
– to open or close the individual disc tray : DISC 1, DISC 2 or DISC 3

⑭ **DISC TRAYS**

⑮ **DISPLAY SCREEN**
– to view the current status of the system.

⑯ **MUTE**
– to interrupt or resume sound reproduction.

⑰ **CD DIRECT 1/2/3**
– to select a disc tray for playback.

⑱ **IS (INCREDIBLE SURROUND)**
– to activate or deactivate the surround sound effect.

Controls

⑲ **DIM**
– to select various dim mode : DIM 1, DIM 2, DIM 3 or DIM OFF.

⑳ **AUTO REV. (AUTO REVERSE)**
– to select the desired tape playback modes.

㉑ **TIMER**
– to display timer or set the timer.

㉒ **REPEAT**
– to playback track(s)/disc(s)/programme repeatedly.

㉓ **SHUFFLE**
– to playback all available discs and their tracks/ programme in random order.

㉔ **TIMER ON/OFF**
– to activate or deactivate the timer function.

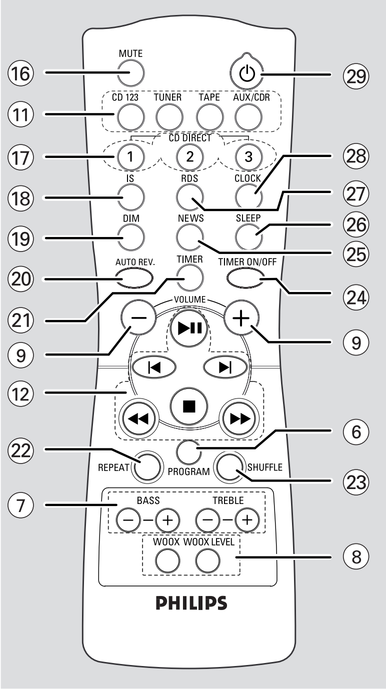
㉕ **NEWS**
– to hear News automatically.

㉖ **SLEEP**
– to activate, deactivate or set the sleep timer function.

㉗ **RDS**
– to select RDS information.

㉘ **CLOCK**
– to display clock or set the clock.

㉙ ⏻
– to switch the system to Standby mode or Eco Power Standby mode.


MUTE
CD 123
TUNER
TAPE
AUX/CDR
CD DIRECT
1
2
3
IS
RDS
CLOCK
DIM
NEWS
SLEEP
AUTO REV.
TIMER
TIMER ON/OFF
VOLUME
REPEAT
PROGRAM
SHUFFLE
BASS
TREBLE
WOOX
WOOX LEVEL
PHILIPS
⑯
⑪
⑰
⑱
⑲
⑳
㉑
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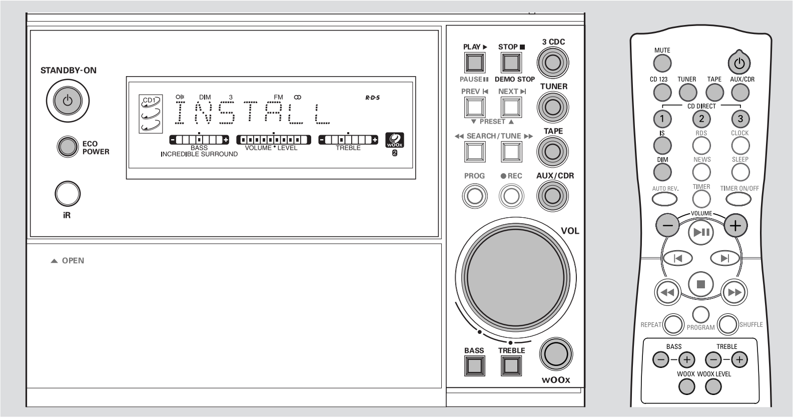
⑥
㉓
⑧

Notes for remote control:
– First, select the source you wish to control by pressing one of the source select keys on the remote control (CD 123 or TUNER, for example).
– Then select the desired function (▶, I◀, ▶I, for example).

Basic Functions


STANDBY-ON
ECO POWER
iR
OPEN
INSTALL
BASS
INCREDIBLE SURROUND
VOLUME
LEVEL
TREBLE
RDS
PLAY ▶
STOP ■
PAUSE II
DEMO STOP
PREV I◀
NEXT ▶I
PRESET
SEARCH/TUNE
PROG
● REC
3 CDC
TUNER
TAPE
AUX/CDR
VOL
BASS
TREBLE
wOOx

IMPORTANT!
Before operating the system, complete the preparation procedures.

Plug and Play

Plug and Play allows you to store all available RDS stations and radio stations automatically.

If Plug and Play has not been installed

1 When you turn on the system, "AUTO INSTALL - PRESS PLAY" will be displayed.

2 Press **PLAY ▶ (▶II)** on the system to start installation.
➜ "INSTALL" will be displayed and followed by "TUNER" and then "AUTO".
➜ **PROGRAM** will start flashing.
➜ The system will search for all RDS stations and then continue with radio stations on FM, MW and LW band respectively. Weak RDS stations may be stored in later presets.
➜ All available RDS and radio stations with sufficient signal strength will be stored automatically.
➜ The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
➜ The last preset radio station or the first available RDS station will play when Plug and Play is completed.

3 The system will proceed to set the RDS time automatically with the stored RDS preset station.

● If no RDS station is found in the first preset station;
➜ The programme will exit automatically.

● If RDS radio station is found;
➜ "INSTALL" will be displayed and followed by "TIME".

● When searching RDS time;
➜ "SEARCH RDS TIME" will be displayed.
➜ When RDS time is read, "RDS TIME" will be displayed. The current time will be displayed for 2 seconds and stored automatically.
➜ If RDS station does not transmit RDS time within 90 seconds, the programme will exit automatically and the display will show "NO RDS TIME".

To reinstall Plug and Play

1 In Standby or Demonstration mode, press and hold **PLAY ▶ (▶II)** on the system until "AUTO INSTALL - PRESS PLAY" is displayed.

2 Press **PLAY ▶(▶II)** again to start installation.
➜ All previously stored radio stations will be replaced.

To exit without storing the Plug and Play

● Press ■ on the system.

Basic Functions

Notes:
– When the power is turned on, the disc tray may open and close to initialise the system.
– If you do not complete Plug and Play installation, Plug and Play will be reinitiated the next time you turn on the power.
– If no stereo frequency is detected during Plug and Play, "CHECK ANTENNA" will be displayed.
– During Plug and Play, if no button is pressed within 15 seconds, the system will exit Plug and Play mode automatically.

Demonstration mode

The system has a demonstration mode that shows the various features offered by the system.

To activate the demonstration

- In Standby mode, press and hold **DEMO STOP** on the system until "DEMO ON" is displayed.
  ➜ The demonstration will begin.

To deactivate the demonstration

- Press and hold **DEMO STOP** on the system until "DEMO OFF" is displayed.
  ➜ The system will switch to Standby mode.

Note:
– Even if you remove the AC power cord and reconnect it to the wall socket, the demonstration will remain off until you activate it again.

Switching the system on

In Standby/Demonstration mode

- Press **STANDBY ON**.
  ➜ The system will switch to the last selected source.
- Press **3CDC (CD 123)**, **TUNER**, **TAPE**, **AUX/CDR**.
  ➜ The system will switch to the selected source.
- Press any one of the disc **OPEN•CLOSE (DISC 1 / DISC2 / DISC 3)** button.
  ➜ The system will switch to CD mode.

In Eco Power Standby mode

- Press **ECO POWER**.
  ➜ The system will switch to last selected source.
- Press **CD 123**, **TUNER**, **TAPE** or **AUX/CDR** on the remote control.
  ➜ The system will switch to the selected source.

Switching the system to Standby mode

In Demonstration mode

- Press and hold **DEMO STOP** on the system.

In any other source mode (except Eco Power Standby mode)

- Press **STANDBY ON** (or ⏻ on the remote control).
  ➜ The clock will appear on the display when the system is in Standby mode.

Switching the system to Eco Power Standby mode (< 1 Watt)

- Press **ECO POWER** (or press and hold ⏻ on the remote control).
  ➜ "ECO PWR" will be displayed, then the display screen will go blank.
  ➜ The low power ECO POWER LED will be lighted.

Note:
– If you have not deactivated the demonstration, it will resume five seconds after the system switches to Eco Power Standby or Standby mode.

Power Saving Automatic Standby

As a power-saving feature, the system will automatically switch to Standby mode if you do not press any buttons within 30 minutes after a disc or tape has stopped playing.

Basic Functions

Dim mode

You can select the desired brightness for the display.

- Press **DIM** on the remote control repeatedly to select DIM 1, DIM 2, DIM 3 or DIM OFF display mode.
  ➜ **DIM** and the corresponding mode number will appear on the display, except for DIM OFF mode.

DIM OFF	All available LEDs light up, display screen will have full brightness, music level bar active.
DIM 1	Some LEDs light up, display screen will have full brightness, music level bar inactive.
DIM 2	All lightings turn off, display screen will have full brightness, music level bar inactive.
DIM 3	All lightings turn off, display screen will be at half brightness, music level bar inactive.

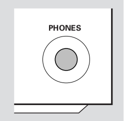
← music level bar

Volume Control

Adjust **VOL** to increase (turn knob clockwise or press VOLUME +) or decrease (turn knob anti-clockwise or press VOLUME –) the sound level.
➜ "-XX dB" will be displayed. "XX" denotes the volume level.
➜ When reached the minimum volume level, "VOL MUTE" will be displayed.

To listen through the headphones

- Connect the headphones plug to the **PHONES** socket at the front of the system.
  ➜ The speakers will be muted.



To switch off the volume temporarily

- Press **MUTE** on the remote control.
  ➜ Playback will continue without sound and "MUTE" will be displayed.
- To restore the volume, press **MUTE** again or increase the volume level.

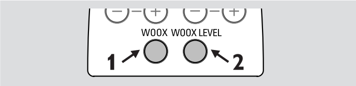
Interactive Sound Control

For optimal sound listening, you are only able to select BASS/TREBLE or wOOx at a time** (for model MC-70 only)**.

wOOx *(for model MC-70 only)*
There are three wOOx settings to enhance the bass response.

- Press **wOOx** on the system repeatedly to select the next wOOx level or switch off the wOOx effect.

OR



1 Press **wOOx** on the remote control to switch ON (enhanced) or OFF (normal) the wOOx sound effect.
2 When wOOx is switched on, press **wOOx LEVEL** on the remote control repeatedly to select the desired wOOx level : WOOX 1, WOOX 2, WOOX 3 or WOOX OFF.
➜ If "WOOX 1, 2 or 3"" is selected, **woox** and the corresponding level number will appear on the display.
➜ If "WOOX OFF"" is selected, the wOOx sound effect will be switched off.

Notes:
– When switched off the wOOx effect, the last Bass/Treble will resume automatically.
– Some discs or tapes might be recorded in high modulation, which causes a distortion at high volume. If this occurs, deactivate wOOx or reduce the volume.

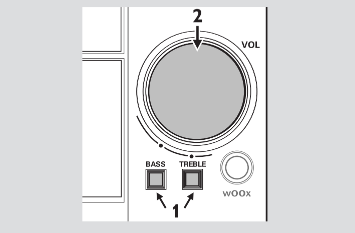
Basic Functions

Bass/Treble

The BASS (low tone) and TREBLE (high tone) feature enables you to define the sound-processor settings.

- Press **BASS** +/– or **TREBLE** +/– on the remote control repeatedly to select the next Bass or Treble level.

OR


2
VOL
BASS
TREBLE
wOOx
1

1 Press **BASS** or **TREBLE** on the system to select Bass or Treble sound feature.
2 Adjust the **VOL** on the system to select the desired Bass or Treble level.
➜ "BASS XX" or "TREB XX" will be displayed. "XX" denotes the level as follows :

MIN ➝ -2 …➝ 0 ➝ 1… ➝ +2 ➝ MAX …

BASS
TREBLE

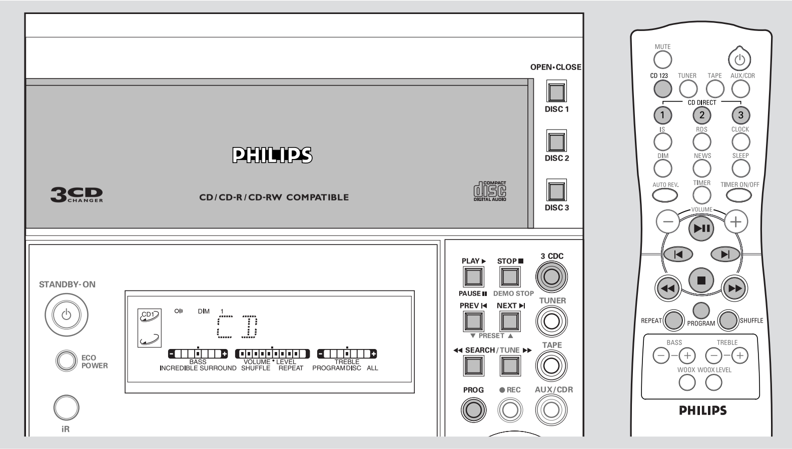
Notes:
– The volume knob can be used to adjust Bass/ Treble level immediately after you have selected the respective Bass/Treble sound feature. If the volume knob is not used within 5 seconds, it will become normal volume control function.
– The Bass/Treble mode will exit automatically if wOOx feature selected (for model MC-70 only).

IS (Incredible Surround)

The Incredible Surround magnifies the virtual distance between the front speakers for an incredibly wide, enveloping, stereo effect.

- Press **IS** on the remote control repeatedly to activate/deactivate the surround sound effect.
➜ If activated, **INCREDIBLE SURROUND** will appear on the display and "INCR SURROUND" will be displayed.
➜ If deactivated, "IS OFF" will be displayed.

CD Operation

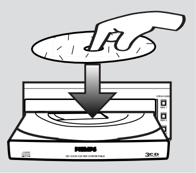

OPEN•CLOSE
DISC 1
DISC 2
DISC 3
PHILIPS
3CD CHANGER
CD/CD-R/CD-RW COMPATIBLE
STANDBY-ON
ECO POWER
iR
PLAY
STOP
3 CDC
PAUSE
DEMO STOP
PREV
NEXT
TUNER
PRESET
SEARCH/TUNE
TAPE
PROG
REC
AUX/CDR
BASS
INCREDIBLE SURROUND
VOLUME
LEVEL
SHUFFLE
REPEAT
TREBLE
PROGRAM
DISC
ALL
MUTE
CD 123
TUNER
TAPE
AUX/CDR
CD DIRECT
1
2
3
IS
RDS
CLOCK
DIM
NEWS
SLEEP
AUTO REV.
TIMER
TIMER ON/OFF
VOLUME
REPEAT
PROGRAM
SHUFFLE
BASS
TREBLE
WOOX
WOOX LEVEL
PHILIPS

IMPORTANT!
– This system is designed for regular discs. Therefore, do not use any accessories such as disc stabiliser rings or disc treatment sheets, etc., as offered on the market, because they may jam the changer mechanism.
– Do not load more than one disc into each tray.

Discs for Playback

This system can playback all digital audio CD, finalised digital audio CD-Recordable (CDR) discs and finalised digital audio CD-Rewritable (CDRW)discs.

Loading Disc



1 Press **3CDC (CD 123)** to select CD mode.
2 Press one of the disc **OPEN•CLOSE** button **(DISC 1**, **DISC 2** or **DISC 3)** to open the desired disc tray.
➜ The selected disc tray slides out.
3 Load a disc with the label side facing up.
4 Press again the corresponding button to close the disc tray.
➜ "READING" will be displayed. The selected disc tray, total number of tracks and the playing time will appear on the display.

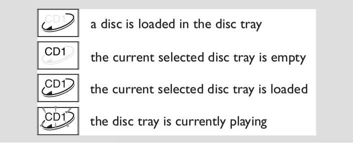
To select a desired disc tray

- Press **3CDC** (or **CD 123** on the remote control) repeatedly.
➜ "DISC 1", "DISC 2" or "DISC 3" will be displayed.

Notes:
– To ensure good system performance, wait until the disc trays completely read the disc(s) before proceeding.
– The CD changer is only able to read the status of the current selected disc tray.

CD Operation

Disc Playback



a disc is loaded in the disc tray

the current selected disc tray is empty

the current selected disc tray is loaded

the disc tray is currently playing

To playback all discs on the disc trays

- Press **PLAY ▶ (▶II)**.
  ➜ All the available discs will playback once, then stop.
  ➜ During playback, the selected disc tray, track number and elapsed playing time of the current track will appear on the display.

To playback one disc only

- Press one of the **CD DIRECT 1/2/3** buttons on the remote control.
  ➜ The selected disc will playback once, then stop.

To interrupt playback

- Press **PAUSE II (▶II)**.
  ➜ The current track time flashing.
- To resume playback, press **PLAY ▶ (▶II)** again.

To stop playback

- Press ■.

To search for a particular passage during playback

- Press and hold ◀◀ or ▶▶ and release it when the desired passage is located.
  ➜ During searching, the volume will be reduced.

To select a desired track

- Press I◀ or ▶I repeatedly until the desired track appears on the display.
- If playback is stopped, press **PLAY ▶ (▶II)** to start playback.

Note:
– In Shuffle mode, pressing I◀ will cause the player to skip only to the beginning of the current track.

To skip to the beginning of the current track during playback

- Press I◀ **once**.

To replace disc during playback

You are able to replace or load in disc into the other two disc trays without interrupting current playback.

- While playback, press the disc **OPEN•CLOSE** button of the inactive disc trays (refer to "Loading Disc").
- If you press disc **OPEN•CLOSE** button of the active disc tray, the disc will stop playing and the disc tray will slide out.
  ➜ Once the disc tray is opened, it will be deselected.

Programming the disc tracks

Programming tracks is possible when playback is stopped. Up to 40 tracks can be stored in the memory in any order.

1 Load the desired discs on the disc trays (refer to "Loading Disc").
2 Press **PROG** to start programming.
➜ **PROGRAM** will start flashing.
3 Press **3CDC** or **CD DIRECT 1/2/3** button to select a disc.
4 Press I◀ or ▶I repeatedly to select the desired track.
5 Press **PROG** to store the track.
● Repeat ***steps 3–5*** to store other discs and tracks.
6 Press **PLAY ▶ (▶II)** to start programme playback.
➜ "PLAY PROGRAM" will be displayed.
● To end programming without starting playback, press ■ **once** .
➜ The total number of tracks programmed and the total playing time will appear on the display.

Notes:
– If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "- - : - -" will appear on the display instead of the total playing time.
– If you attempt to programme more than 40 tracks, "PROGRAM FULL" will be displayed.
*– If you press any of the CD DIRECT 1/2/3 buttons on the remote control, the system will playback the selected disc or track, and the stored programme will be ignored temporarily. The **PROGRAM** symbol also will disappear temporarily from the display. It will reappear when playback of the selected disc ends.*

CD Operation

– During programming, if no key is pressed within 20 seconds, the system will exit the Programme mode automatically.

To review the programme

- Stop playback and press I◀ or ▶I repeatedly.
- To exit review mode, press ■.

To erase the entire programme

- Press ■ **once** when playback is stopped or **twice** during playback.
  ➜ "PROGRAM CLEARED" will be displayed.
  ➜ **PROGRAM** will disappear from the display.

Note:
– The programme will be erased when the system is disconnected from the power supply or when the disc tray is opened.

Repeat

The current track, a disc, all available discs or all programmed tracks can be played repeatedly.

1 Press **REPEAT** on the remote control repeatedly to select various repeat modes.
● **In normal playback**
➜ "TRACK" – to repeat the current track, **REPEAT** will appear on the display.
➜ "DISC" – to repeat the entire disc, **REPEAT** and **DISC** will appear on the display.
➜ "ALL DISC" – to repeat all available discs, **REPEAT**, **DISC** and **ALL** will appear on the display.
● **In programme playback**
➜ "TRACK" – to repeat the current programmed track, **REPEAT** and **PROGRAM** will appear on the display.
➜ "PROGRAM" – to repeat all programmed tracks, **REPEAT**, **PROGRAM**, **DISC** and **ALL** will appear on the display.
● The selected track/disc(s)/programme will now be played repeatedly until you press ■.
2 To resume normal playback, press **REPEAT** until the "OFF" mode is displayed.
➜ **REPEAT** will disappear from the display.

Notes:
– Selecting SHUFFLE during repeat playback will cancel all repeat modes.
– Pressing any disc OPEN•CLOSE button will cancel all repeat modes.

Shuffle

All the available discs and their tracks or all the programmed tracks can be played in random order.

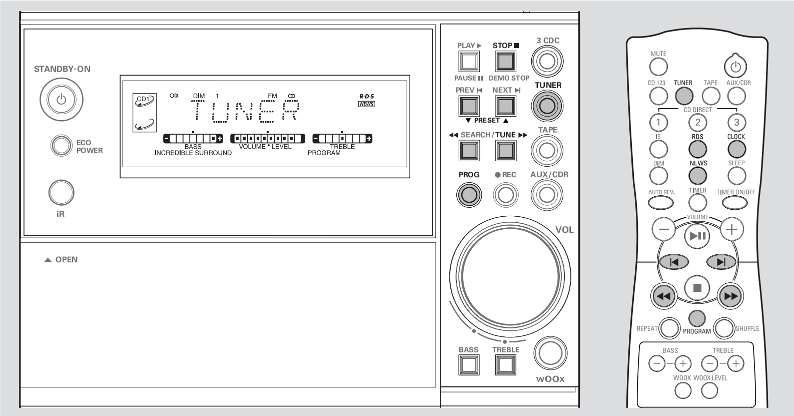
1 Press **SHUFFLE** on the remote control.
➜ **SHUFFLE** will appear on the display.
● The discs and the tracks will be played in random order until you press ■.
2 To resume normal playback, press **SHUFFLE** again.
➜ **SHUFFLE** will disappear from the display.

When select REPEAT mode during shuffling

- **In normal shuffled playback**
  ➜ "TRACK" – to repeat shuffling the current track.
  ➜ "ALL DISC" – to repeat shuffling all available discs.
- **In programme shuffled playback**
  ➜ "TRACK" – to repeat shuffling the current programmed track.
  ➜ "PROGRAM" – to repeat shuffling all programmed tracks.

Note:
– Pressing any disc OPEN•CLOSE button will cancel shuffle mode.

For Recording, please refer to "Tape Operation/Recording".



Storing Preset Radio Stations

You can store up to 40 preset radio stations in the memory.

Automatic Preset Programming

- Plug and Play setting (refer to "Basic Functions - Plug and Play").
OR

1. Press **TUNER** to select TUNER mode.
➜ "TUNER" will be displayed. A few seconds later, the current radio frequency will appear on the display.
➜ If a FM station is received in stereo, ⚭ will appear on the display.

To begin automatic preset from a desired preset number

- Press ⏮ or ⏭ to select the desired preset number.
➜ For those radio stations that had been stored in one of the preset will not be restored again to another preset number.

2. Press and hold **PROG** until "AUTO" appears on the display.
➜ **PROGRAM** will start flashing.
➜ The system will search for all RDS stations and then continue with radio stations on FM, MW and LW band respectively.
➜ All available radio stations with sufficient signal strength will be stored automatically.
➜ The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
➜ The last preset radio station or the first available RDS station will then be played when completed.

To stop storing the automatic preset

- Press **PROG** or ■ on the system.

Note:
– If no preset number is selected, automatic preset will begin from preset (1) and all your former presets will be overridden.

Manual Preset Programming

1. Press **TUNER** repeatedly to select the desired waveband : FM, MW or LW.
2. Press **PROG**.
➜ **PROGRAM** will start flashing.
➜ The next available preset number will be displayed for selection.
3. Press and hold ◀◀ or ▶▶ until the frequency indication starts to change, then release.
➜ The display will show "SEARCH" until a radio station with sufficient signal strength is found.

To store the radio station to another preset number

- Press ⏮ or ⏭ to select the desired preset number.

4. Press **PROG** again to store the radio station.
➜ **PROGRAM** will disappear from the display.

- Repeat ***steps 2–4*** to store other preset radio stations.

Tuning to a weak radio station

- Press ◀◀ or ▶▶ briefly and repeatedly until the optimal reception is found.

To stop storing the manual preset

- Press ■ on the system.

Notes:
– If you attempt to store more than 40 preset radio stations, "PROGRAM FULL" will be displayed.
– During programming, if no key is pressed within 20 seconds, the system will exit the Programme mode automatically.

Tuning to Preset Radio Stations

- Once you've preset the radio stations, press ⏮ or ⏭ to select the desired preset number.
➜ The preset number, radio frequency, and waveband will appear on the display.

Erasing a Preset Radio Station

1. Press ⏮ or ⏭ to select the preset radio station to be erased.
2. Press and hold ■ on the system until "PRESET DELETED" appears on the display.
➜ The radio frequency remain on the display.
➜ The preset numbers of all other preset radio stations in the band with higher numbers are also decreased by one.

- Repeat ***steps 1–2*** to erase other preset radio stations.

For Recording, please refer to "Tape Operation/Recording".

RDS

RDS (Radio Data System) is a broadcasting service that allows FM stations to send additional information along with the regular FM radio signal. This additional information can contain:

STATION NAME: The radio station name is displayed.
PROGRAMME TYPE: The following programme types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, M.O.R. (middle of the road music), Light M, Classics, Other M, No type.
RADIO TEXT (RT): text messages appear on the display.

Receiving RDS Radio Station

- Tuned to a radio station from FM band.
➜ If the radio station transmitting RDS signal, the RDS logo (**R·D·S**) and the radio station name will appear on the display.

To check the RDS information

- Press **RDS** on the remote control repeatedly to scroll through the following information (if available) : STATION NAME → PROGRAMME TYPE → RADIO TEXT → TUNED FREQUENCY → STATION NAME ....

Notes:
– If the tuned radio station does not transmit RDS signal or is a non RDS station, "NO RDS" will be displayed.
– If the RDS text message is not available at the RDS station, "NO RDS TEXT" will be displayed.

RDS Time

Some RDS station may be transmitting a real clock time at an interval of every minute.

Setting the RDS time

1. Press and hold **CLOCK** on the remote control.
➜ "00:00" or current time starts flashing.
2. Press **RDS** on the remote control.
➜ "SEARCH RDS TIME" will be displayed.
➜ When RDS time is read, "RDS TIME" will be displayed. The current time will be displayed for 2 seconds and stored automatically.
➜ If the RDS station does not transmit RDS time within 90 seconds, "NO RDS TIME" will be displayed.

Radio Reception

Note:
– Some RDS station may be transmitting a real time clock at a minute interval. The accuracy of the transmitted time depends on the transmitting RDS station.

NEWS *(only available in RDS radio station)*

Once the News PTY (Programme Type) is detected in a RDS station, it will switch to TUNER mode automatically.

IMPORTANT!
You can activate NEWS function in Standby, Demonstration or any source mode except Tuner and Eco Power Standby mode.

To start NEWS function

1 Press **NEWS** on the remote control.
➜ "NEWS" and NEWS logo (NEWS) will appear on the display.
➜ It will scan the radio stations stored in the first 5 preset and wait for the News Programme Type data to be available in any of these RDS radio stations.
- If no RDS station is detected in the first 5 presets, the system will exit NEWS function.
➜ "NO RDS NEWS" will be displayed and NEWS will disappear from the display.

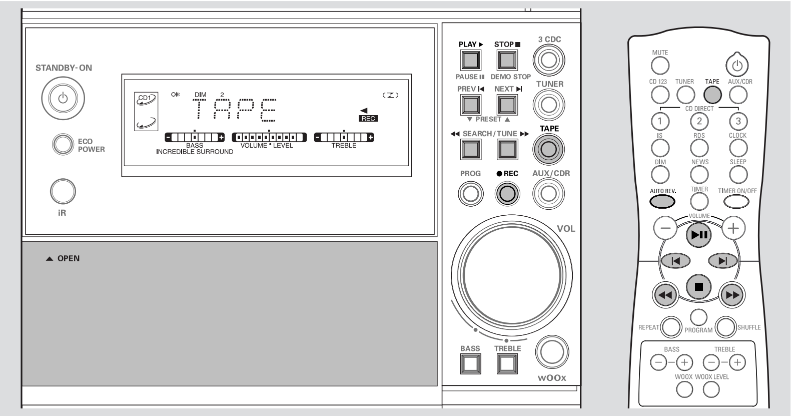
2 When NEWS transmission is detected, the system will switch to Tuner mode automatically.
➜ NEWS will start flashing.
- At the end of news bulletin, the syetem will switch to the last selected source and resume its last operation (for example, before detecting the transmission, the system is playing track 5 of disc 1, it will resume playback from the same position).

Notes:
– You have to exit Tuner mode before selecting NEWS function.
– While searching NEWS in progress, the current source activity will remain uninterrupted.
– Before you activate the NEWS feature, ensure that the first 5 presets have RDS stations.
– The NEWS works only once for each activation.
– The NEWS will not start if a recording is in progress.

To cancel NEWS function

- Press **NEWS** again or press **TUNER** to select tuner mode.
- During news bulletin, press any other available source keys to execute the relevant source mode.

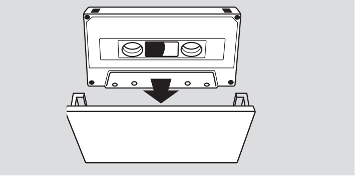
Tape Operation/Recording



IMPORTANT!
– Before playing a tape, check and tighten slack tape with a pencil. Slack tape may get jammed or may burst in the mechanism.
– C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system.
– Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV or speaker).

Tape Playback

1 Press **TAPE** to select tape mode.
2 Press ⏶ **OPEN** to open the tape deck door.
3 Insert a recorded tape and close the tape door.
- Load the tape with the open side down and the full spool to the left.



4 Press **PLAY ▶ (▶II)** to start playback.
➜ "TAPE" with playback direction indicator will appear on the display.

To stop playback

- Press ■.

To change the playback side

- Press I◀ or ▶I.
➜ The ◀ (BACK) or ▶ (FRONT) appear on the display, depending on the tape side selected.

To change the playback mode

- Press **AUTO REV.** on the remote control repeatedly to select the different playback modes.
⊐ : playback on one side of the tape only.
⊃ : both sides are played once.
⊂⊃ : both sides are played repeatedly, up to 10 times each side unless you press ■.

To rewind or fast forward during playback

- Press and hold ◀◀ or ▶▶ until the desired passage is reached, then release.
➜ The tape continues playing.
- The tape will stop automatically at the end of the rewinding or fast forwarding.
➜ During searching, the sound is reduced to a low volume.

To rewind or fast forward when playback is stopped

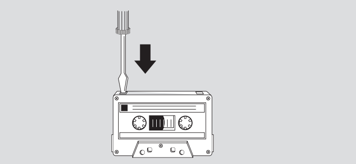
1 Press ◀◀ or ▶▶.
2 Press ■ when you reached the desired passage.

Tape Operation/Recording

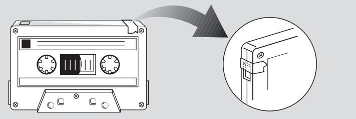
Note:
– During rewinding or fast forwarding of a tape, it is also possible to select another source (CD, TUNER or AUX, for example).

General Information on Recording

- For recording, use only tape of IEC type I (normal tape) or IEC type II ($Cr0_2$).
- The recording level is set automatically, regardless of the position of the Volume, Incredible Surround, BASS/TREBLE, and so forth.
- The tape is secured at both ends with leader tape. At the beginning and end of the tape, nothing will be recorded for six to seven seconds.
- To prevent accidental recording, break out the tab on the left shoulder of the tape side you want to protect.



- If "CHECK TAPE" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening. Do not cover the $Cr0_2$ tape detection hole when covering the tab opening.



IMPORTANT!
Recording is permissible if copyright or other rights of third parties are not infringed upon.

Preparation for Recording

1 Press **TAPE** to select tape mode.
2 Load a recordable tape into the tape deck.
3 Press ⏮ or ⏭ to select the recording tape side.
➜ ◀ appears on the display for the reverse side.
➜ ▶ appears on the display for the forward side.
4 Press **AUTO REV.** on the remote control repeatedly to select a recording mode.
➜ for recording on one side only.
➜ for recording on both sides.
5 Prepare the source to be recorded.
3CDC – load the disc(s).
TUNER – tune to the desired radio station.
AUX – connect external equipment.

When recording is in progress
➜ REC starts flashing.
- It is not possible to change tape side.
- It is not possible to listen to another source.
- It is not possible to activate the timer function.

One Touch Recording

1 Press **3CDC**, **TUNER** or **AUX** to select the source.
2 Start playback of the selected source.
3 Press ● **REC** to start recording.

To stop recording
- Press ■ on the system.

Note:
– One Touch Recording is not possible in TAPE mode, "SELECT SOURCE" will be displayed.

Tape Operation/Recording

CD Synchro Recording

1 Press **3CDC** to select the disc.
- Press ⏮ or ⏭ to select the desired track to start recording.
- You can programme the tracks in the order you want them to be recorded (refer to "CD Operation - Programming the disc tracks").

2 Press ● **REC** to start recording.
➜ The disc will start playback automatically.

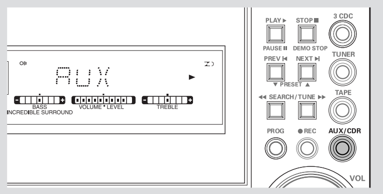
To select another track during recording
1 Press **PAUSE ❚❚ (▶❚❚)** to interrupt recording.
2 Press ⏮ or ⏭ to select the desired track.
3 Press **PLAY ▶ (▶❚❚)** to resume recording.

To stop recording
- Press ■.
➜ Recording and disc playback will stop simultaneously.

Digital Recording via Digital Out

For CD digital recording, please refer to the instruction manuals for the CD recorder, digital audio equipment and so forth.

External Sources



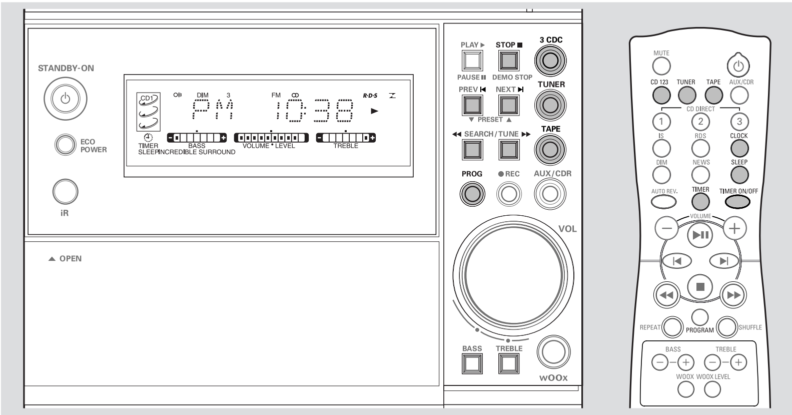
Listening to External Sources

1 Connect the audio out terminals of the external equipment (TV, VCR, Laser Disc player, DVD player or CD Recorder) to the AUX/CDR IN terminals of your system.
2 Press **AUX/CDR** repeatedly to select CDR mode or normal AUX mode.
➜ "CDR" or "AUX" will be displayed.
- If the sound from the external source is distorted, select CDR mode for listening.

Notes:
– You are advised not to listen to and record from the same source simultaneously.
– All the interactive sound control features (IS or BASS/TREBLE, for example) are available for selection.
– Refer to the operating instructions for the connected equipment for details.

For Recording, please refer to "Tape Operation/Recording".

Clock/Timer



IMPORTANT!
When in Eco Power Standby mode, it is not possible to operate clock or timer function.

Clock Setting

The clock can be set in either 12-hour or 24-hour mode ("AM 12:00" or "00:00" for example)

1 Press and hold **CLOCK** on the remote control until the time flashing on the display.

2 Press **PROG** on the system repeatedly to select clock mode.
➜ If 12-hour mode is selected, "AM XX:XX" will start flashing.
➜ If 24-hour mode is selected, "XX:XX" will start flashing.

3 Press ◀◀ or ▶▶ on the system repeatedly to set the hour.

4 Press |◀ or ▶| on the system repeatedly to set the minute.

5 Press **CLOCK** again to store the setting.
➜ The clock will start working.

To exit without storing the setting

- Press ■ on the system.

Notes:
– The clock setting will be cancelled when the power cord is disconnected or if a power failure occurs.
– During clock setting, if no key is pressed within 90 seconds, the system will exit clock setting mode automatically.
– To set the clock automatically through the time information in the RDS signal, refer to "Radio Reception - RDS Time".

Display Clock

The system allows you to select clock display or normal display in any source mode (except Eco Power Standby mode). When in Standby mode, the clock will automatically be displayed.

- Press **CLOCK** on the remote control repeatedly to select clock display or normal display mode.
➜ When in clock display mode, clock will be displayed. If the clock has not been set, "- - : - -" will appear on the display.

Note:
– If you pressed any keys during clock display mode, the display will briefly show the information related to the selected mode.

Clock/Timer

Timer Setting

The system can switch on to CD, TUNER, or TAPE mode automatically at a preset time, serving as an alarm to wake you up.

IMPORTANT!
– Before setting the timer, ensure that the clock is set correctly.
– The timer will always be switched on after it has been set.
– The timer will not start if a recording is in progress.
– The volume of the timer will increase gradually from the minimum level until it reaches the last tuned volume level.

1 Press and hold **TIMER** on the remote control for more than **two seconds**.
➜ "AM 12:00" or "00:00" or the last timer setting will start flashing.
➜ TIMER ⏲ will start flashing.
➜ The selected source will be lighted while other available sources are flashing.

2 Press **3CDC**, **TUNER** or **TAPE** to select the desired source.

- Before setting timer, make sure the music source has been prepared.
3CDC – Load the disc(s). To start from a specific track, make a programme (refer to "CD Operation - Programming the disc tracks").
TUNER – tune to the desired radio station.
TAPE – load a prerecorded tape.

3 Press ◀◀ or ▶▶ on the system repeatedly to set the hour for the timer to start.

4 Press |◀ or ▶| on the system repeatedly to set the minute for the timer to start.

5 Press **TIMER** to store the start time.
➜ "TIMER ON" will be displayed and followed by the set timer "XX:XX" and then the selected source.
➜ TIMER ⏲ will remain on the display.

- At the preset time, the selected source will play.

To exit without storing the setting

- Press ■ on the system.

Notes:
– If the selected source (CD) is not available when preset timer is reached, TUNER will be selected automatically.
– During timer setting, if no key is pressed within 90 seconds, the system will exit timer setting mode automatically.

To check the TIMER

- Press **TIMER** on the remote control.
➜ If the timer has been activated, the set timer information will be displayed.
➜ If the timer has been deactivated, "OFF" will be displayed.

To activate/deactivate the TIMER

- Press **TIMER ON/OFF** repeatedly on the remote control.
➜ If activated, the last set timer information will be shown for a few seconds and TIMER ⏲ will appear on the display.
➜ If deactivated, "OFF" will be displayed.

Sleep Timer Setting

The sleep timer enables the system to switch to Standby mode automatically at a preset time.

1 Press **SLEEP** on the remote control repeatedly to select a preset time.
➜ The selections are as follows (time in minutes):
15 → 30 → 45 → 60 → OFF → 15 …
➜ "SLEEP XX" or "OFF" will be displayed. "XX" is the time in minutes.

2 When you reach the desired length of time, stop pressing the **SLEEP** button.
➜ SLEEP will appear on the display, except for "OFF" mode.
➜ The Sleep Timer is now set. Before the system switches to standby mode, a countdown of 10 seconds will be displayed.
"SLEEP 10" → "SLEEP 9".... →
"SLEEP 1" → "SLEEP"

While SLEEP mode is activated

To check the remaining length of time

- Press **SLEEP once**.

To change the preset sleep timer

- Press **SLEEP twice**.
➜ The display will show the remaining time followed by the sequence of sleep timer options.

To deactivate the Sleep Timer

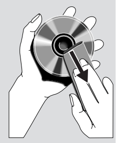
- Press **SLEEP** repeatedly until "OFF" is displayed, or press the **STANDBY ON** button.

Maintenance

Cleaning the Cabinet

- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs



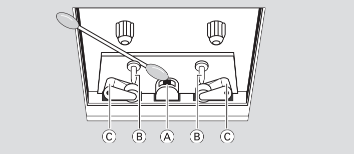
- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the centre out. Do not wipe in a circular motion.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analogue records.

Cleaning the disc lens

- After prolonged use, dirt or dust may accumulate at the disc lens. To ensure good playback quality, clean the disc lens with Philips CD Lens Cleaner or any commercially available cleaner. Follow the instructions supplied with the cleaner.

Cleaning the Heads and the Tape Paths

- To ensure good recording and playback quality, clean the heads Ⓐ, the capstan(s) Ⓑ, and pressure roller(s) Ⓒ after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You also can clean the heads by playing a cleaning tape once.



Demagnetising the heads

- Use a demagnetising tape available at your dealer.

Troubleshooting

WARNING

Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock.

If a fault occurs, first check the points listed below before taking the system for repair. If you are unable to remedy a problem by following these hints, consult your dealer or service centre.

Problem	Solution
CD OPERATION	
"`NO DISC`" **is displayed.**	– Insert a disc. – Check if the disc is inserted upside down. – Wait until the moisture condensation at the lens has cleared. – Replace or clean the disc, see "Maintenance".
"`DISC NOT FINALIZED`" **is displayed.**	– Use a finalised CD-R(W) or CD-R.

Troubleshooting

Problem	Solution
RADIO RECEPTION	
Radio reception is poor.	– If the signal is too weak, adjust the antenna or connect an external antenna for better reception. – Increase the distance between the Mini HiFi System and your TV or VCR.
TAPE OPERATION/RECORDING	
Recording or playback cannot be made.	– Clean deck parts, see "Maintenance". – Use only NORMAL (IEC I) or IEC type II ($Cr0_2$) tape. – Apply a piece of adhesive tape over the missing tab space.
The tape deck door cannot open.	– Remove and reconnect the AC power plug and switch on the system again.
GENERAL	
The system does not react when buttons are pressed.	– Remove and reconnect the AC power plug and switch on the system again.
Sound cannot be heard or is of poor quality.	– Adjust the volume. – Disconnect the headphones. – Check that the speakers are connected correctly. – Check if the stripped speaker wire is clamped.
The left and right sound outputs are reversed.	– Check the speaker connections and location.
The remote control does not function properly.	– Select the source (CD or TUNER, for example) before pressing the function button (▶, ⏮, ⏭). – Reduce the distance between the remote control and the system. – Insert the batteries with their polarities (+/– signs) aligned as indicated. – Replace the batteries. – Point the remote control in the direction of the system's IR sensor.
The timer is not working.	– Set the clock correctly. – Press TIMER ON/OFF to switch on the timer. – If recording is in progress, stop recording.
Not all lighted buttons are showing light.	– Press DIM to select DIM OFF display mode.
The Clock/Timer setting is erased.	– Power has been interrupted or the power cord has been disconnected. Reset the clock/timer.
The system displays features automatically and buttons start flashing.	– Press and hold DEMO STOP on the system to switch off the demonstration.

Additional Features for other versions

Preparations

Ⓐ **Power**

Before connecting the AC power cord to the wall outlet, ensure that the following are done;
– If your system is equipped with a Voltage Selector, set the VOLTAGE SELECTOR to the local power line voltage.
– All other connections have been made.

Controls (except /22 version)

⑲ **AUTO REV. (AUTO REVERSE)**
– to select the desired tape playback modes.

⑳ **TIMER**
– to display timer or set the timer.

㉑ **REPEAT**
– to playback track(s)/disc(s)/program repeatedly.

㉒ **SHUFFLE**
– to playback all available discs and their tracks/ program in random order.

㉓ **TIMER ON/OFF**
– to activate or deactivate the timer function.

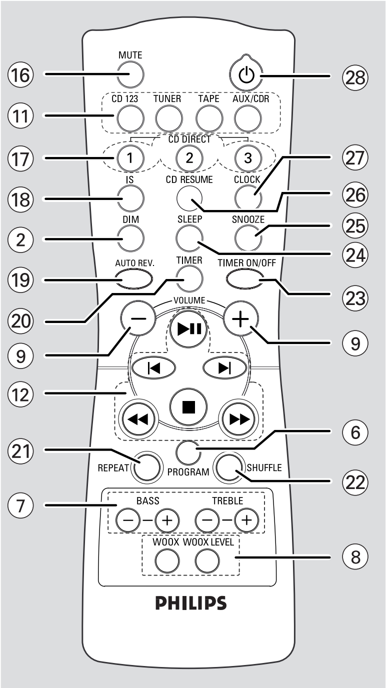
㉔ **SLEEP**
– to activate, deactivate or set the sleep timer function.

㉕ **SNOOZE**
– to temporarily deactivate the wake up timer.

㉖ **CD RESUME**
– to continue playback from the last selected track after an interruption (only when the CD source is still in the active mode).
– to resume the last selected CD mode.

㉗ **CLOCK**
– to display clock or set the clock.

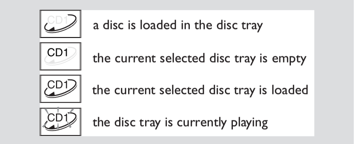
㉘ ⏻
– to switch the system to Standby mode.



Notes for remote control:
– First, select the source you wish to control by pressing one of the source select keys on the remote control (CD 123 or TUNER, for example).
– Then select the desired function (▶, ◀◀, ▶▶, for example).

CD Operation

Disc Playback



CD1	a disc is loaded in the disc tray
CD1	the current selected disc tray is empty
CD1	the current selected disc tray is loaded
CD1	the disc tray is currently playing

To resume playback from the last selected track

- In CD stop or pause mode, press **CD RESUME** on the remote control to start playback again from where you have stopped.

Notes:
– Resume will not be available if you have changed the disc, opened the disc tray or disconnected the system the power supply.
– Select CD RESUME in any other source mode will only able to resume the last selected CD active mode (for example, CD stop or playback).

Radio Reception

Changing Tuning Grid *(available for /21/21M versions)*

In North and South America, the frequency step between adjacent channels in the MW band is 10 kHz (9 kHz in some areas). The preset frequency step in the factory is 9 kHz.

Changing the tuning grid will erase all previously stored preset radio stations.

1 Disconnect the system from the AC power supply (pull out the AC power cord).
2 While holding down **TUNER** and ▶▶ on the system, reconnect the system to the AC power supply.
➜ The display will show "GRID 9" or "GRID 10".

Notes:
– GRID 9 and GRID 10 indicate that the tuning grid is in step of 9 kHz and 10 kHz respectively.
– The FM tuning grid also will be changed from 50 kHz to 100 kHz or vice versa.

Clock/Timer

To activate/deactivate the TIMER

- Press **TIMER ON/OFF** repeatedly on the remote control.
  ➜ If activated, the last set timer information will be shown for a few seconds and **TIMER** ⏲ will appear on the display.
  ➜ If deactivated, "OFF" will be displayed.

To deactivate the wake up timer (five minutes interval)

- After timer wake up, press **SNOOZE** on the remote control.
  ➜ The system will switch to standby mode for five minutes. After then, it resumes the timer last selected source again.
- To cancel the snooze function, press **SNOOZE** again.

Note:
– To enable the snooze function, it should be done within 30 minutes after timer wake up.

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DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

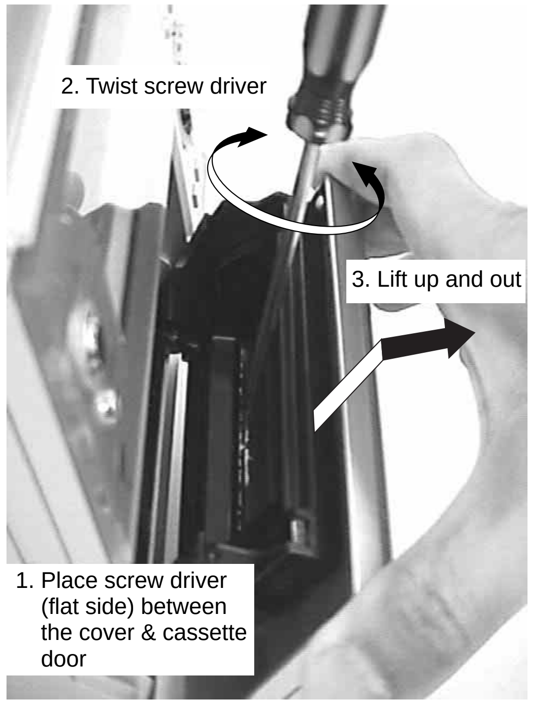

2. Twist screw driver
3. Lift up and out
1. Place screw driver (flat side) between the cover & cassette door

Figure 1 Remove Cassette Cover

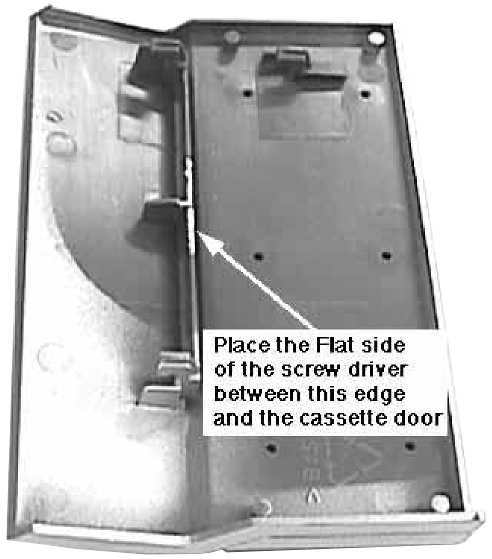

Place the Flat side of the screw driver between this edge and the cassette door

Figure 2 Cassette Cover

Dismantling of the 3DTC Module and Tuner Board

1) Loosen 4 screws and remove the Cover Top (pos 255) by sliding it out towards the rear before lifting up.
   - 2 screws on the rear
   - 1 screw each on the left & right side
2) Loosen 2 screws each to remove the Panel Left and Right (pos 253 & 254). The Panels are remove by sliding it towards the rear and outwards.
   - 1 screw on the side
   - 1 screw on the rear
3) Open the 3DTC Tray by sliding the lever (pos 36) as shown in figure 4 with the help of a flat head screw driver.
4) Remove the Cover Tray (pos 106) as shown in figure 3.
5) Loosen 4 screws A (see figure 4)to remove the 3DTC Module.
   - 2 screws on the front
   - 1 screw each on the left & right side
6) Loosen 3 screws E (see figure 8) on the Panel Rear (pos 256) & uncatch 2 catches C3 to remove the Tuner Board.

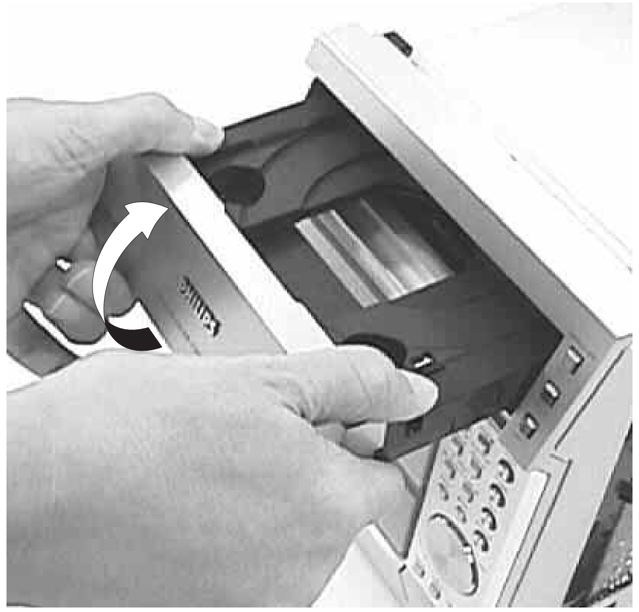


Figure 3

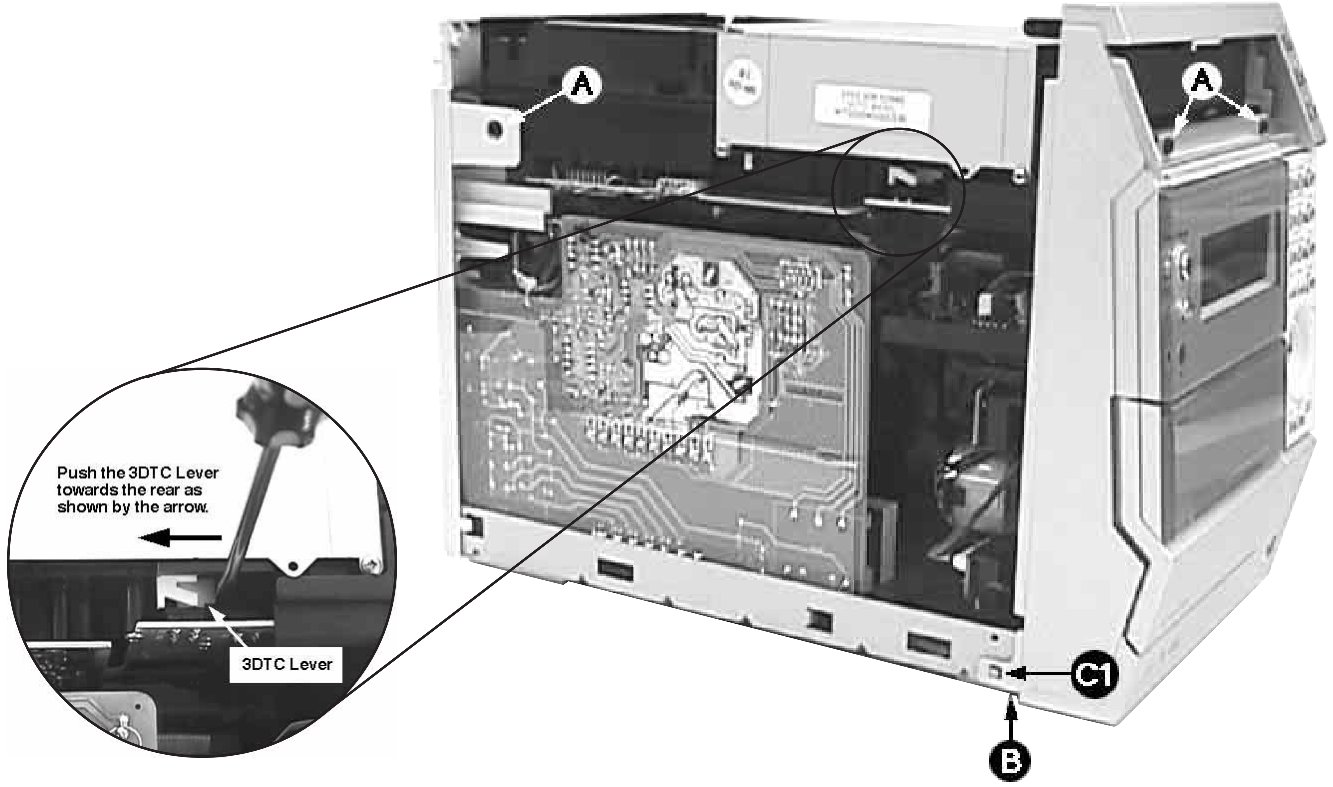

A
A
Push the 3DTC Lever towards the rear as shown by the arrow.
3DTC Lever
C1
B

Figure 4

Detaching the Front Panel assembly from the Bottom/Rear assembly

1) Remove 2 screws B (see figure 4) from the bottom of the Cabinet Front (pos 101).
2) Release the fixation of the Combi Board to Bracket Combi (pos 252) by releasing 2 catches C2 and pulling the board outwards as shown in figure 5.
3) Uncatch 2 catches C1 (see figure 4) on the left & right sides of Cabinet Front (pos 101) and slides the Front Panel assembly out towards the front.

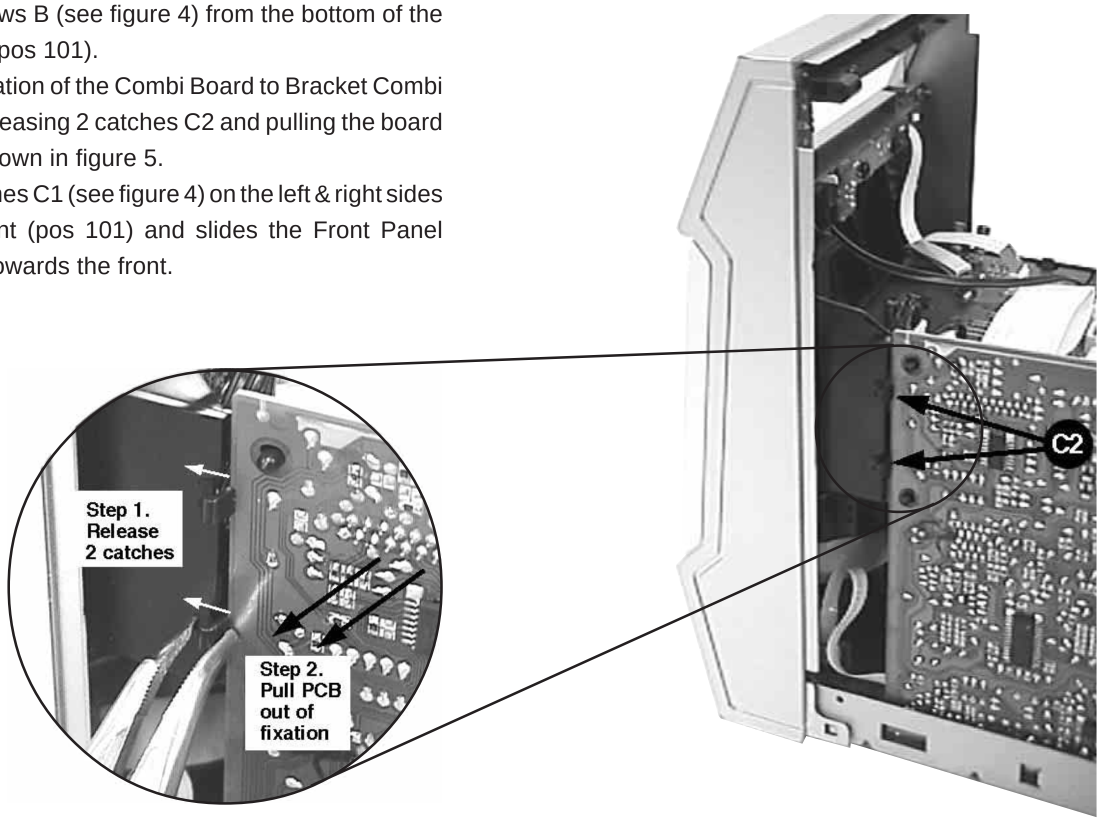

Step 1. Release 2 catches
Step 2. Pull PCB out of fixation
C2

Figure 5

Dismantling of the Front Panel assembly

1) Loosen 4 screws C in figure 7 to remove the ETF6-LE Module.
2) Insert a strong string into the slot between the Jog knob (pos 136) and Cover control (pos 137), looped it until it engage into both the U-slot of the Jog knob and pulled it out as shown in figure 6.
3) Loosen 4 screws D to remove the Display Board assembly.

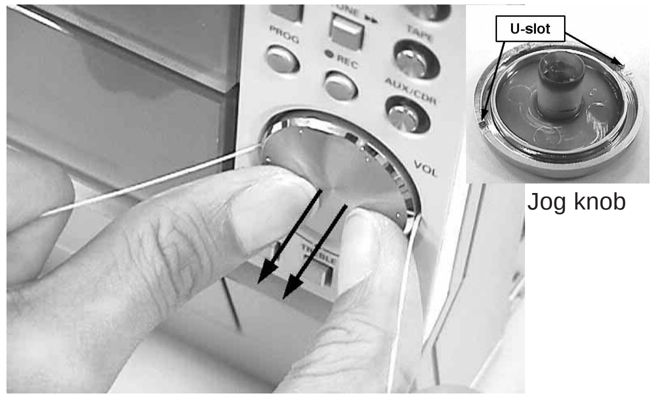

U-slot
Jog knob

Figure 6

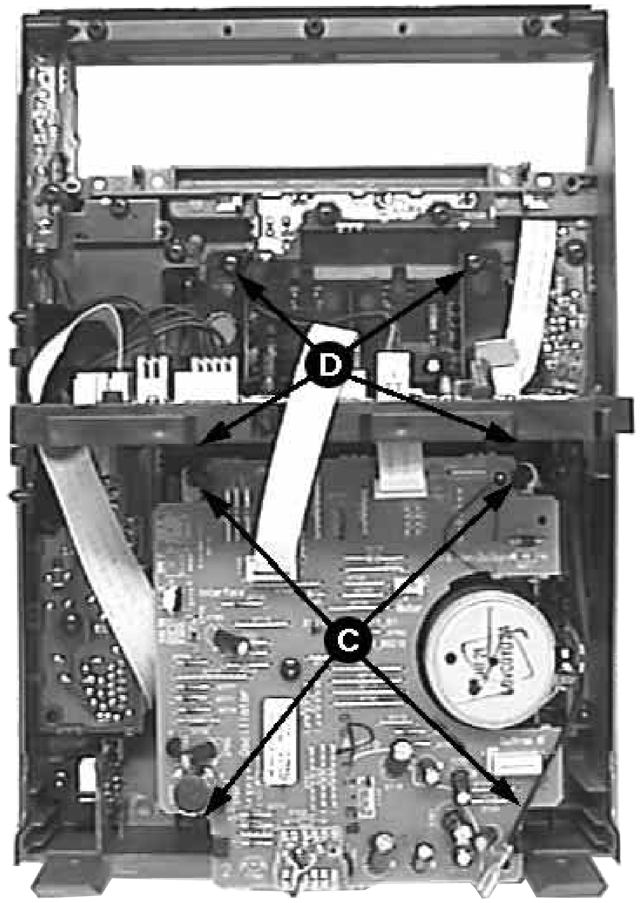


Figure 7

Dismantling of Rear Panel

1) Loosen 3 screws E and 2 catches C3 to remove the Tuner Board assembly.

   Note: Tuner Board assembly can also be remove together with the Panel Rear.
2) Loosen 1 screw F and the 2 catches C4 to free the Mains socket board from the Panel Rear (pos 256).
3) Loosen 6 screws G and 2 catches C5 to remove the Panel Rear (pos 256) by sliding it out towards the rear.

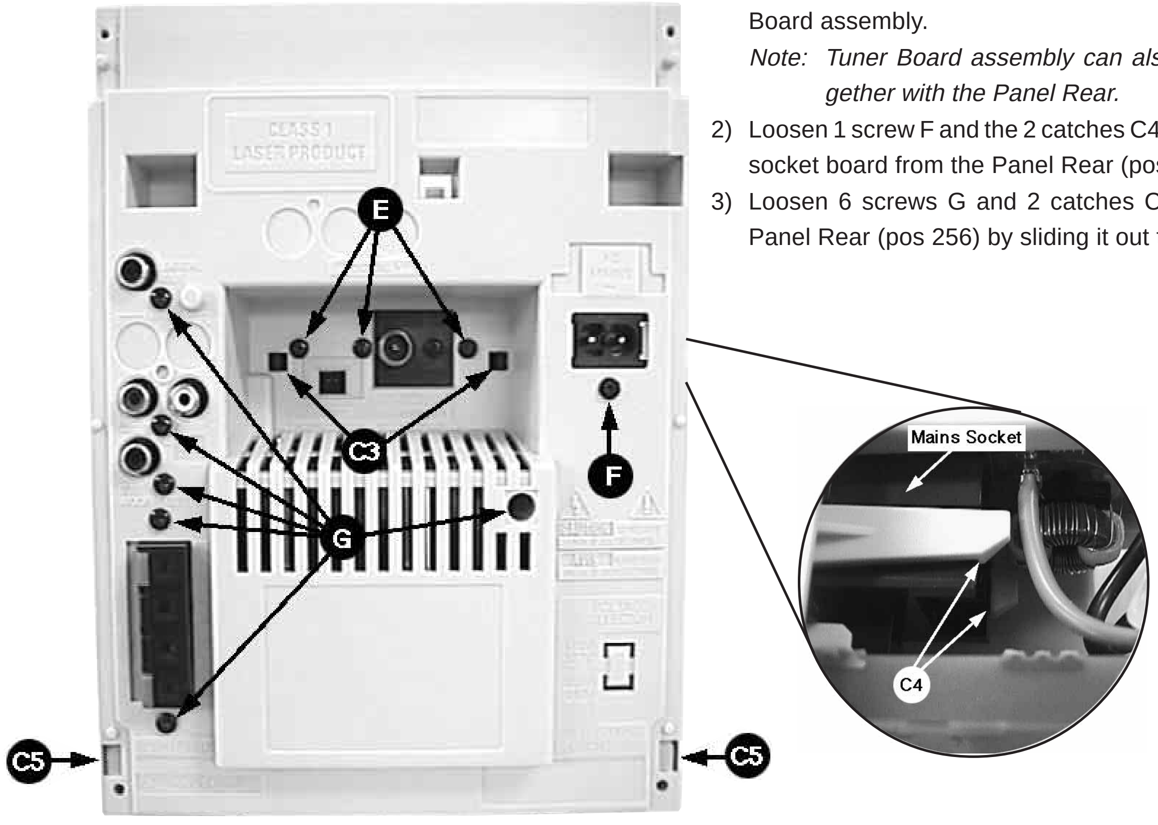

E
C3
F
G
C5
C5
Mains Socket
C4

Figure 8

Dismantling of the Bottom assembly

1) Loosen 2 screws H as shown in figure 9 to remove the Combi / Regulator boards assembly.
2) Loosen1 screws J and uncatch Shield Transformer from the Bottom plate (pos 265) as shown in figure 11 to remove it.
3) Loosen 4 screws K mounting the Mains Transformer to remove the Mains Board & Transformer assembly.
4) Loosen 2 screws L to remove the Housing Fan top (pos 267).

Note: During Fan replacement care should be taken to ensure that the following are correct:
- fan blades direction
- fan wire position
- fan is properly supported by the rubber damper

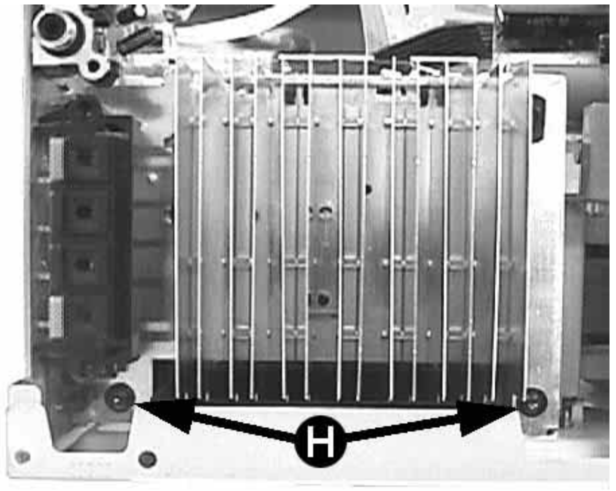


Figure 9

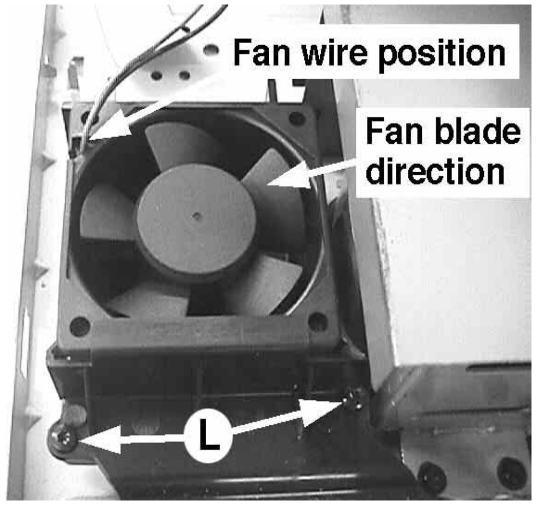

Fan wire position
Fan blade direction
L

Figure 10

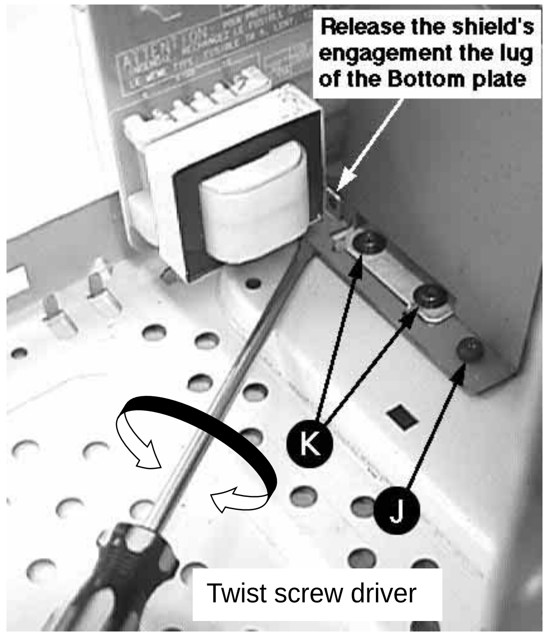

Release the shield's engagement the lug of the Bottom plate
K
J
Twist screw driver

Figure 11

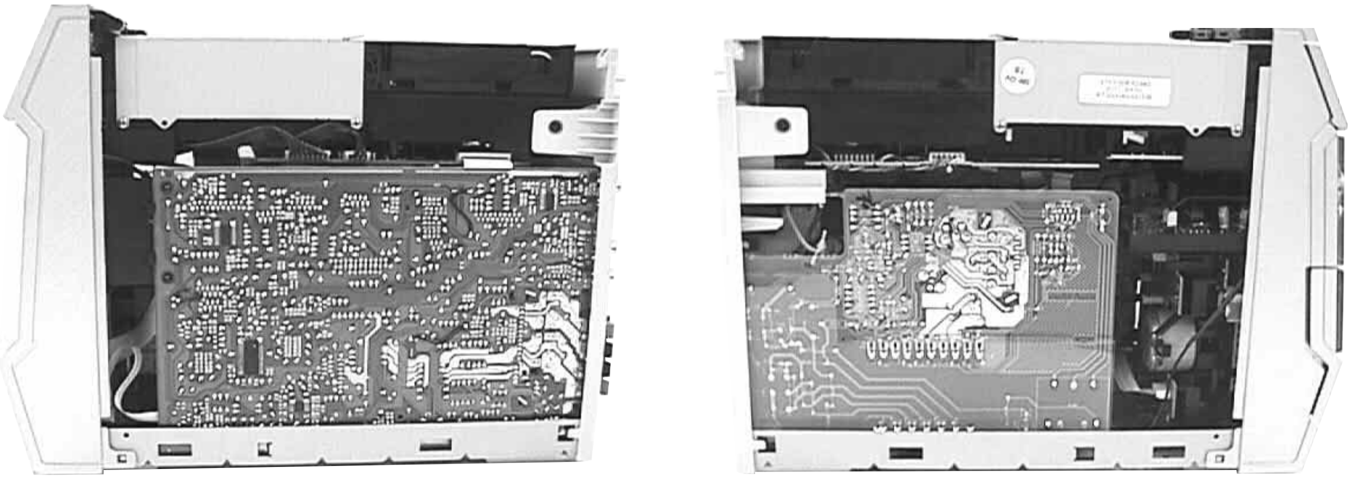
SERVICE POSITIONS & REPAIR HINTS

1) During repair it is possible to disconnect the ECO6 Tuner board, ETF6 Tape Module and/or CDC Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.

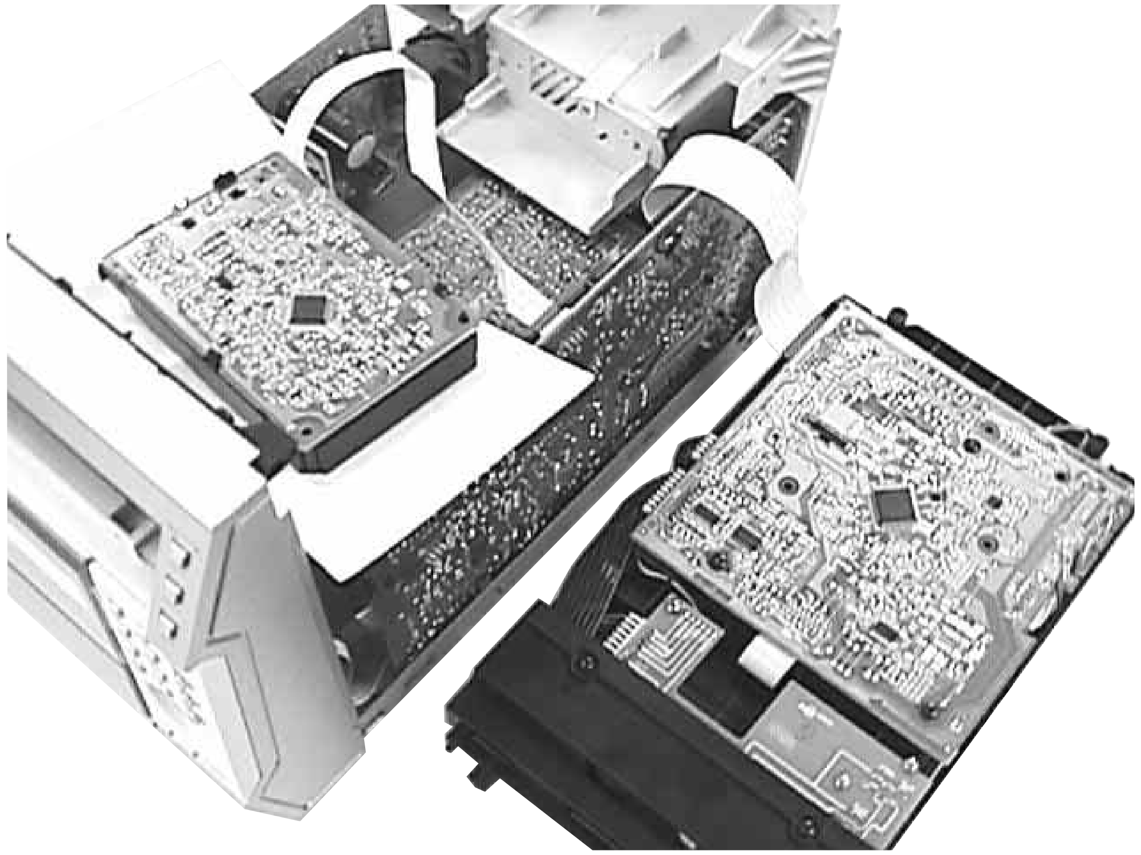
2) For Service position C (repair on the ETF6 Tape module), it is necessary to inter-change the flex wires for connector 1701 & 1706 because of wire length.

Note: *The flex cables are very fragile, care should be taken not to damage them during repair. After repair, be very sure that the flex cables are inserted properly into the flex sockets before encasing, otherwise faults may occurs.*

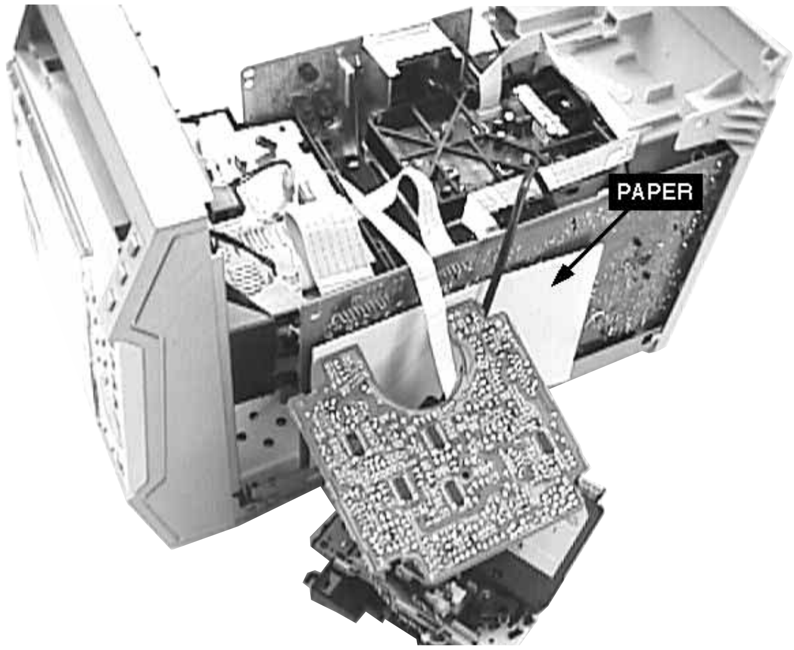
Service pos A



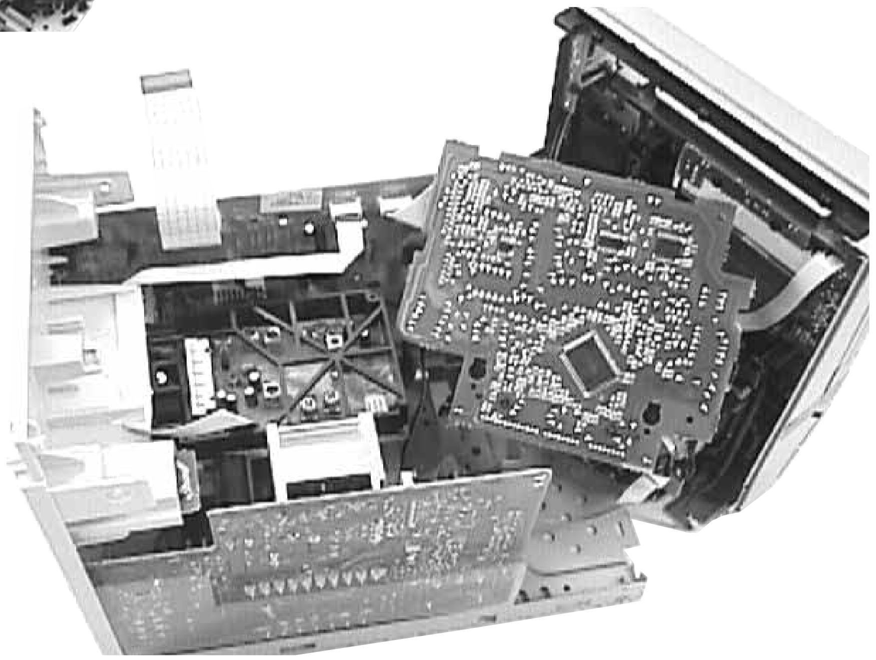
Service pos B



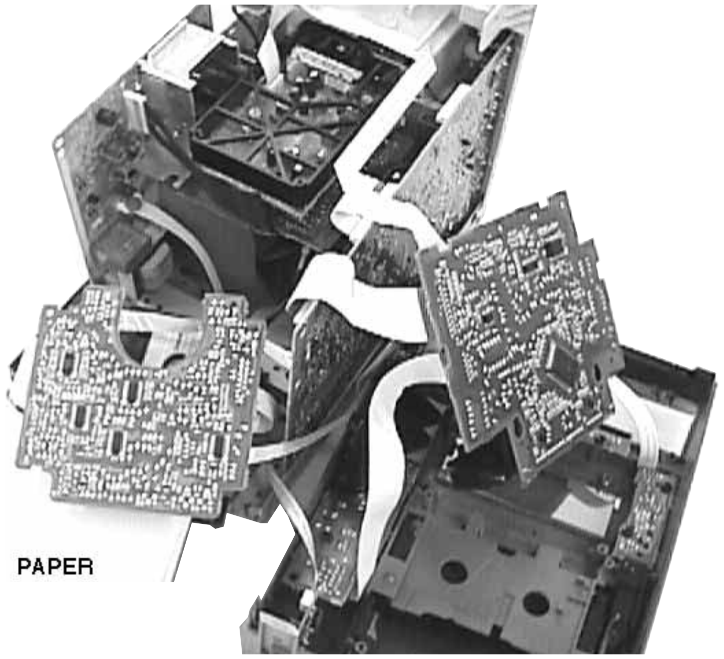
Service pos C



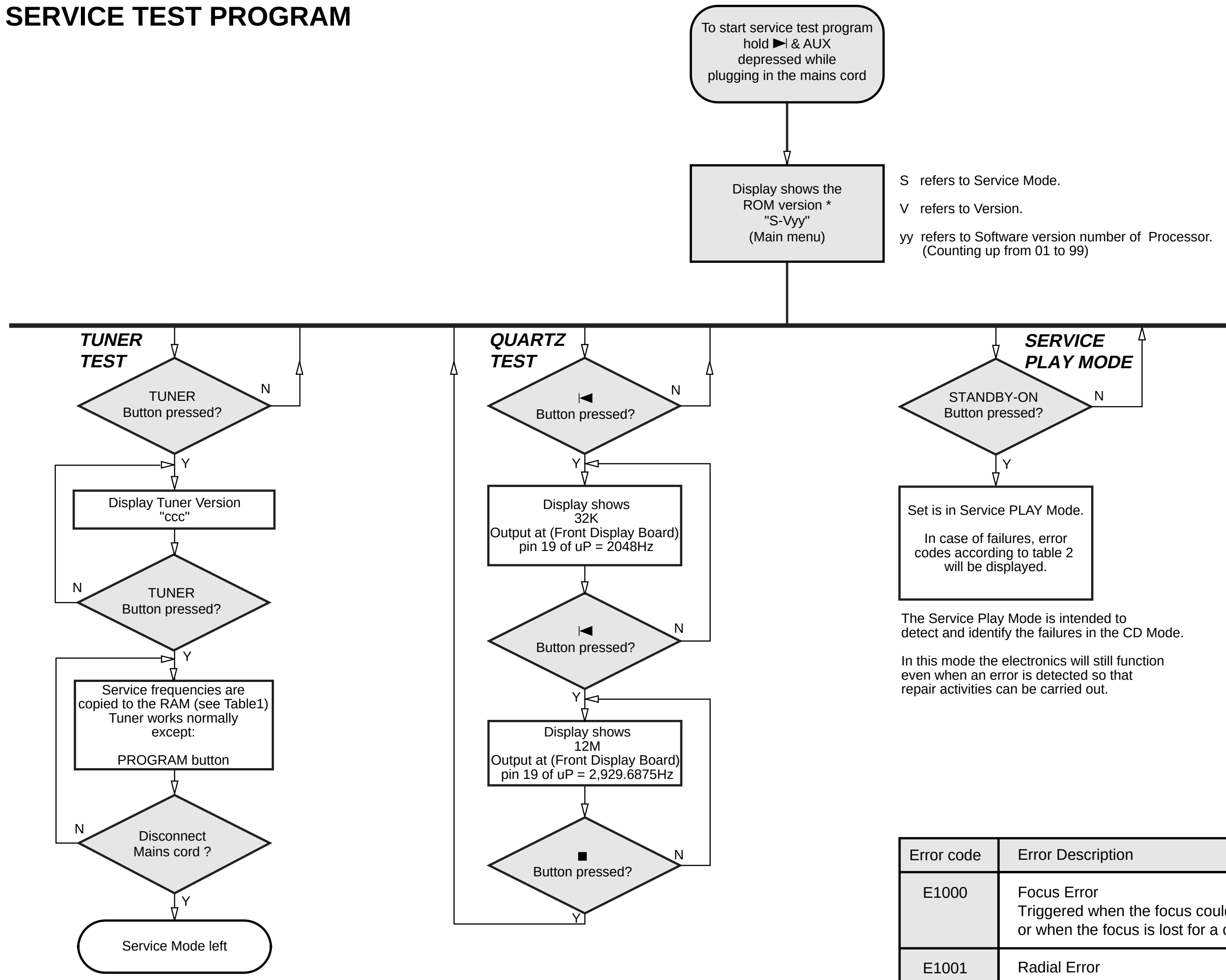
Service pos D



Service pos D



SERVICE TEST PROGRAM


To start service test program hold ►I & AUX depressed while plugging in the mains cord
Display shows the ROM version * "S-Vyy" (Main menu)
TUNER TEST
TUNER Button pressed?
N
Y
Display Tuner Version "ccc"
TUNER Button pressed?
N
Y
Service frequencies are copied to the RAM (see Table1) Tuner works normally except: PROGRAM button
Disconnect Mains cord ?
N
Y
Service Mode left
QUARTZ TEST
I◄ Button pressed?
N
Y
Display shows 32K Output at (Front Display Board) pin 19 of uP = 2048Hz
I◄ Button pressed?
N
Y
Display shows 12M Output at (Front Display Board) pin 19 of uP = 2,929.6875Hz
■ Button pressed?
N
Y
SERVICE PLAY MODE
STANDBY-ON Button pressed?
N
Y
Set is in Service PLAY Mode. In case of failures, error codes according to table 2 will be displayed.

S refers to Service Mode.

V refers to Version.

yy refers to Software version number of Processor.
(Counting up from 01 to 99)

The Service Play Mode is intended to detect and identify the failures in the CD Mode.

In this mode the electronics will still function even when an error is detected so that repair activities can be carried out.

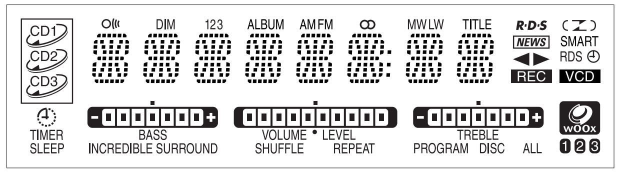
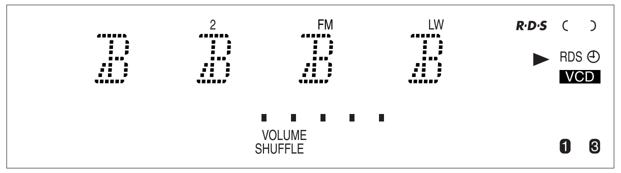
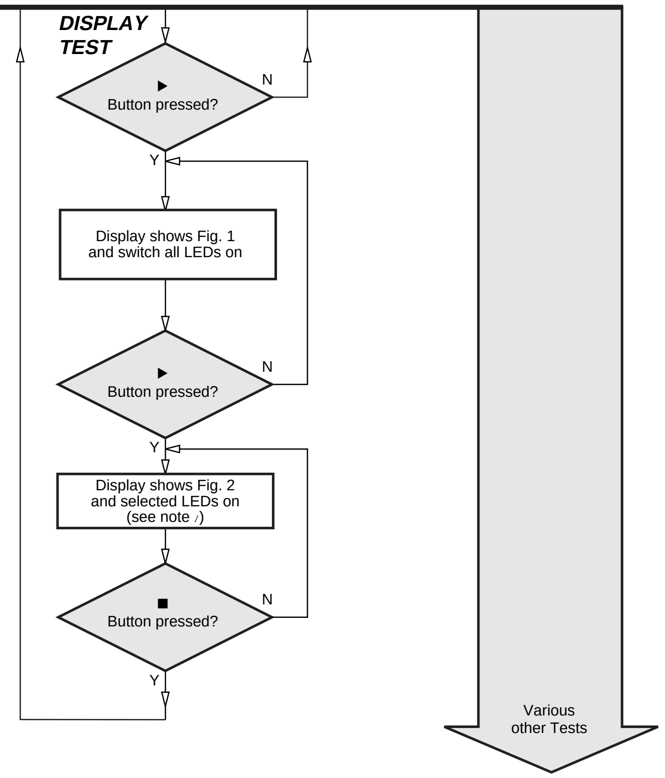

CD1
CD2
CD3
DIM
123
ALBUM
AM FM
MW LW
TITLE
R·D·S
NEWS
SMART
RDS
REC
VCD
TIMER
SLEEP
BASS
INCREDIBLE SURROUND
VOLUME
LEVEL
SHUFFLE
REPEAT
TREBLE
PROGRAM
DISC
ALL
wOOx
1 2 3

Figure 1


2
FM
LW
R·D·S
RDS
VCD
VOLUME
SHUFFLE
1 3

note ♪: 3CDC, TAPE and wOOx

Figure 2


DISPLAY TEST
► Button pressed?
N
Y
Display shows Fig. 1 and switch all LEDs on
► Button pressed?
N
Y
Display shows Fig. 2 and selected LEDs on (see note ♪)
■ Button pressed?
N
Y
Various other Tests

PRESET	Europe "EUR"			USA "USA"	Oversea "OSE"
1	87.5MHz			87.5MHz	87.5MHz
2	108MHz			108MHz	108MHz
3	531kHz			530kHz	531/530kHz*
4	1602kHz			1700kHz	1602/1700kHz*
5	558kHz			560kHz	558/560kHz*
6	1494kHz			1500kHz	1494/1500kHz*
7	153kHz			98MHz	98MHz
8	279kHz			87.5MHz	87.5MHz
9	198kHz			87.5MHz	87.5MHz
10	98MHz			87.5MHz	87.5MHz
11	87.5MHz			87.5MHz	87.5MHz

Table 1

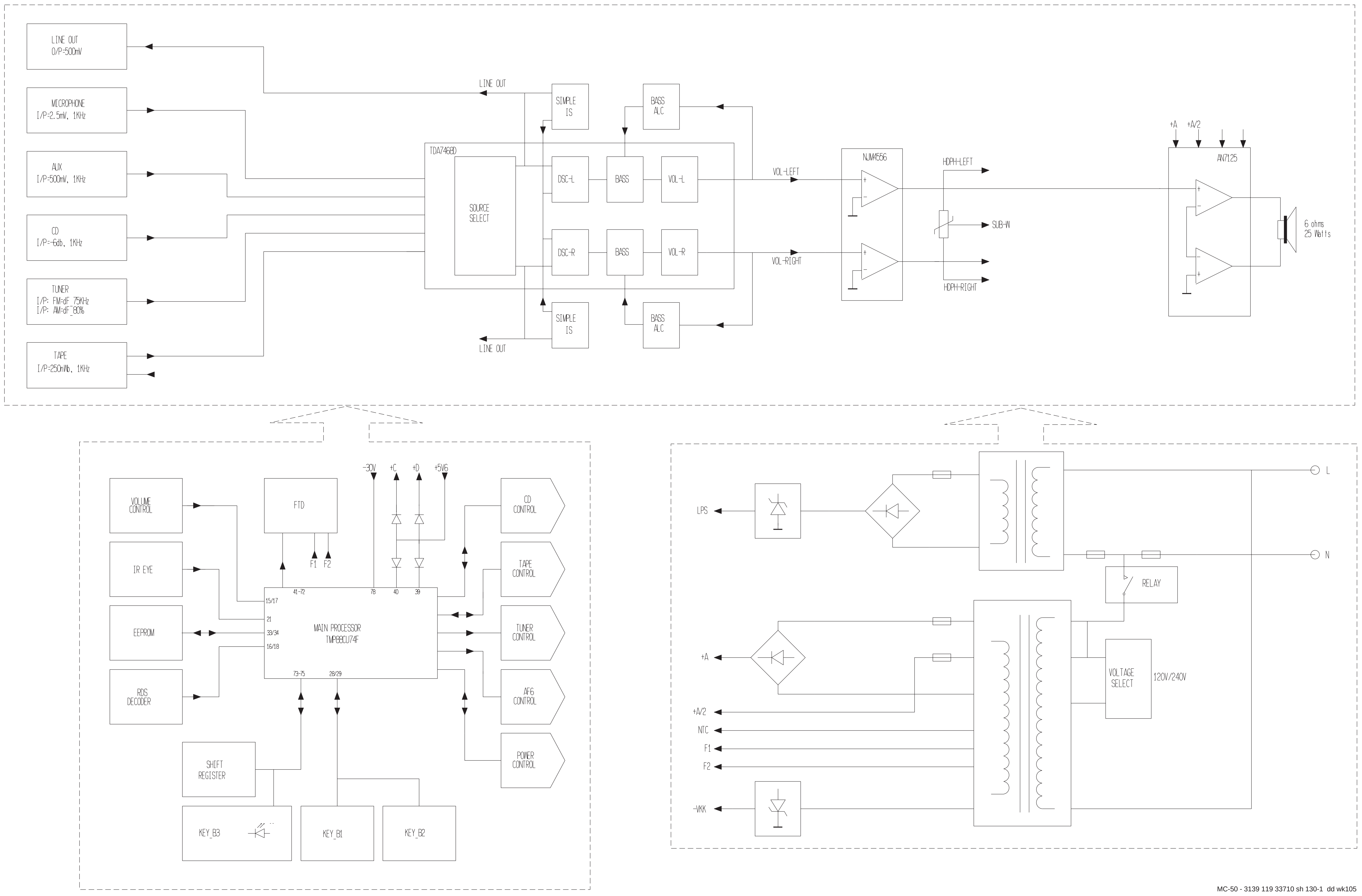
Note: * Depending on the selected grid frequency (9 or 10kHz)
By holding the TUNER and ►► buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.

Error code	Error Description
E1000	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed by. Inner-switch or sledge motor problem.
E1003	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time.
E1006	Subcode Error Triggered when a new subcode was missing for a certain time during play.
E1007	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Disc motor problem.
E1020	Focus Search Error The focus point has not been found within a certain time.
E1031	The active lower carriage does not come to the end position within a certain time. This can happen when the switches are defective, or when the carriage is blocked in between two end positions (example: 2 disc in one carriage). The time-out is approximately 5 seconds.
E1061	The drawer could not enter the inside position and is opening again. This can happen if the drawer is blocked such that it cannot go fully inside, or if the drawer switch is defective and never closes.
E1071	The active upper carriage does not come to the end position within a certain time. This happen when the switches are defective, or when the carriage is blocked in between two end positions (example: 2 disc in one carriage)/ The time-out is approximately 5 Sec.
E1079	The drawer could not enter the outside position and is stopped at its blocked position. This can happen if the drawer is blocked such that it cannot go fully outside, or if the drawer switch is defective and never opens.

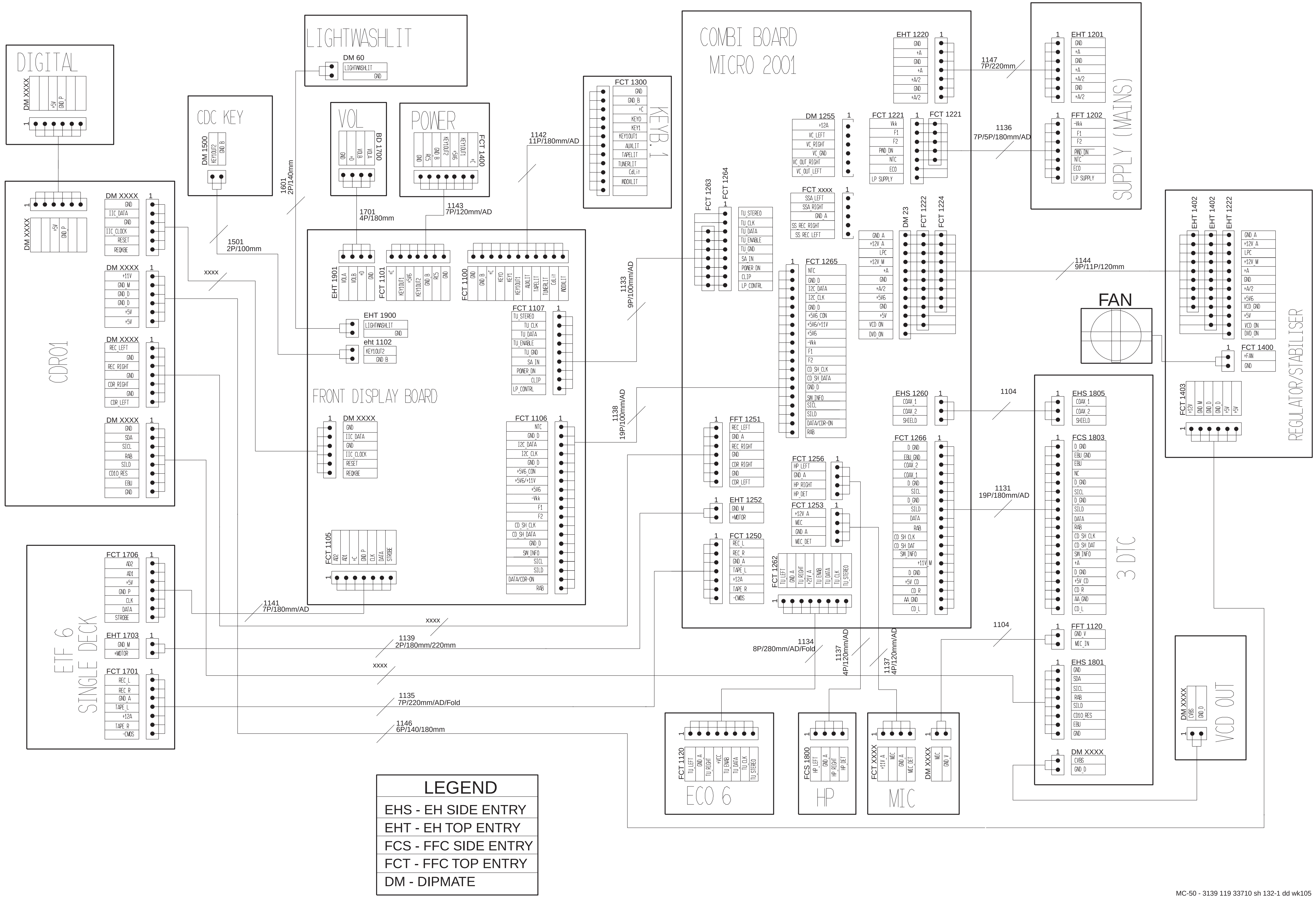
Table 2

TEST	***Activated with***	***ACTION***
EEPROM TEST	►► ■ to Exit	8 test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT	◄◄	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
ENCODER TEST	Volume Knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 dB until VOL MUTE (Min.) or 0dB (Max.) is reached.
DEMO MODE	Treble	Pressing this button will toggle between DEMO ON and DEMO OFF. The DEMO status will scroll once on the Display.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

SET BLOCK DIAGRAM


LINE OUT
O/P=500mV
MICROPHONE
I/P=2.5mV, 1KHz
AUX
I/P=500mV, 1KHz
CD
I/P=-6db, 1KHz
TUNER
I/P: FM=dF_75KHz
I/P: AM=dF_80%
TAPE
I/P=250nWb, 1KHz
LINE OUT
TDA7468D
SOURCE SELECT
SIMPLE IS
BASS ALC
DSC-L
BASS
VOL-L
DSC-R
BASS
VOL-R
SIMPLE IS
BASS ALC
LINE OUT
VOL-LEFT
VOL-RIGHT
NJM4556
HDPH-LEFT
SUB-W
HDPH-RIGHT
+A
+A/2
AN7125
6 ohms
25 Watts
VOLUME CONTROL
IR EYE
EEPROM
RDS DECODER
FTD
F1
F2
-30V
+C
+D
+5V6
41-72
78
40
39
15/17
21
33/34
16/18
MAIN PROCESSOR
TMP88CU74F
73-75
28/29
CD CONTROL
TAPE CONTROL
TUNER CONTROL
AF6 CONTROL
POWER CONTROL
SHIFT REGISTER
KEY_B3
KEY_B1
KEY_B2
LPS
L
N
RELAY
+A
VOLTAGE SELECT
120V/240V
+A/2
NTC
F1
F2
-VKK

SET WIRING DIAGRAM


DIGITAL
DM XXXX
LIGHTWASHLIT
DM 60
CDC KEY
DM 1500
VOL
BD 1700
POWER
FCT 1400
KEYB.1
FCT 1300
COMBI BOARD
MICRO 2001
EHT 1220
DM 1255
FCT 1221
FCT xxxx
FCT 1263
FCT 1264
FCT 1265
DM 23
FCT 1222
FCT 1224
FFT 1251
EHT 1252
FCT 1250
FCT 1256
FCT 1253
FCT 1262
EHS 1260
FCT 1266
SUPPLY (MAINS)
EHT 1201
FFT 1202
REGULATOR/STABILISER
EHT 1402
EHT 1222
FCT 1400
FCT 1403
FAN
3 DTC
EHS 1805
FCS 1803
FFT 1120
EHS 1801
DM XXXX
VCD OUT
CDR01
FRONT DISPLAY BOARD
EHT 1901
FCT 1101
FCT 1100
EHT 1900
eht 1102
FCT 1107
FCT 1106
FCT 1105
ETF 6
SINGLE DECK
FCT 1706
EHT 1703
FCT 1701
ECO 6
FCT 1120
HP
FCS 1800
MIC
FCT XXXX
1142 11P/180mm/AD
1601 2P/140mm
1501 2P/100mm
xxxx
1701 4P/180mm
1143 7P/120mm/AD
1133 9P/100mm/AD
1138 19P/100mm/AD
1141 7P/180mm/AD
xxxx
1139 2P/180mm/220mm
xxxx
1135 7P/220mm/AD/Fold
1146 6P/140/180mm
1134 8P/280mm/AD/Fold
1137 4P/120mm/AD
1137 4P/120mm/AD
1147 7P/220mm
1136 7P/5P/180mm/AD
1144 9P/11P/120mm
1104
1131 19P/180mm/AD
1104

LEGEND

EHS - EH SIDE ENTRY
EHT - EH TOP ENTRY
FCS - FFC SIDE ENTRY
FCT - FFC TOP ENTRY
DM - DIPMATE

FRONT DISPLAY BOARD

TABLE OF CONTENTS

FTD Display pins connection 6-1
Circuit diagram 6-2
Components & Chips Layout 6-3
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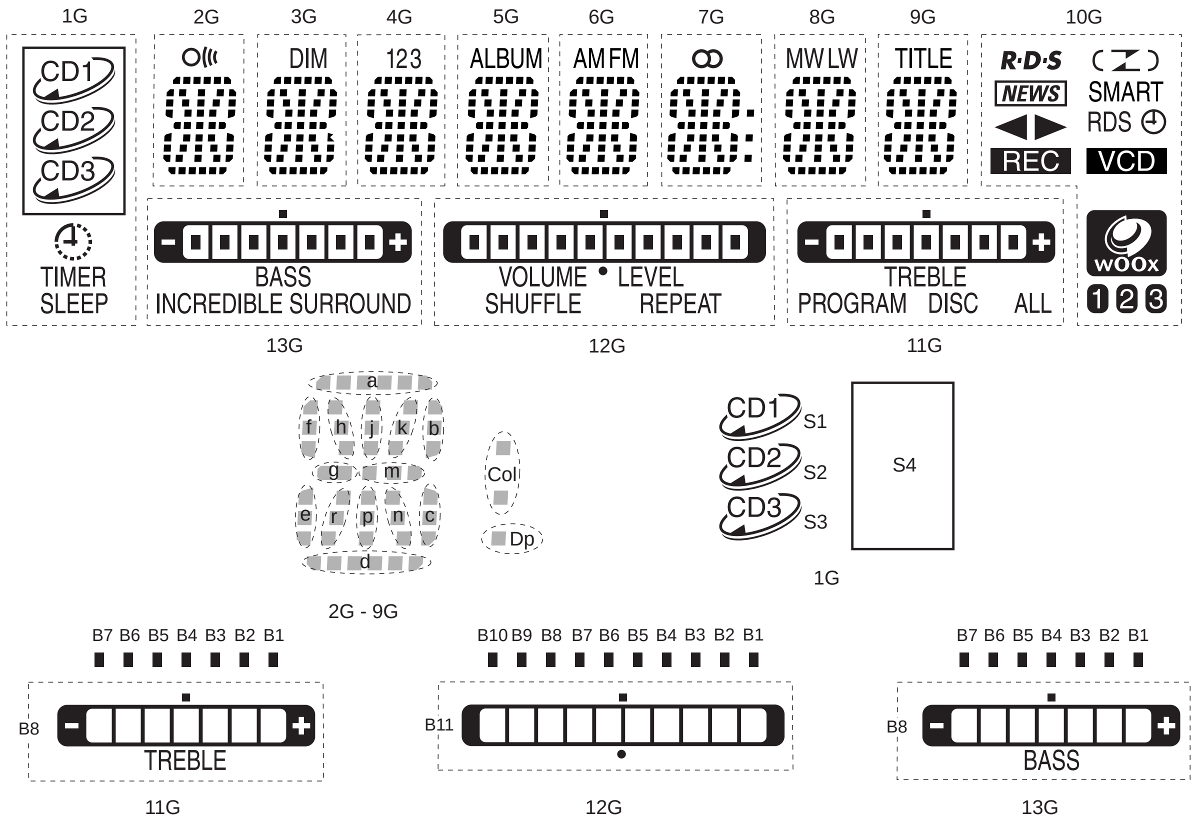
FTD DISPLAY PIN ASSIGNMENT & CONNECTION



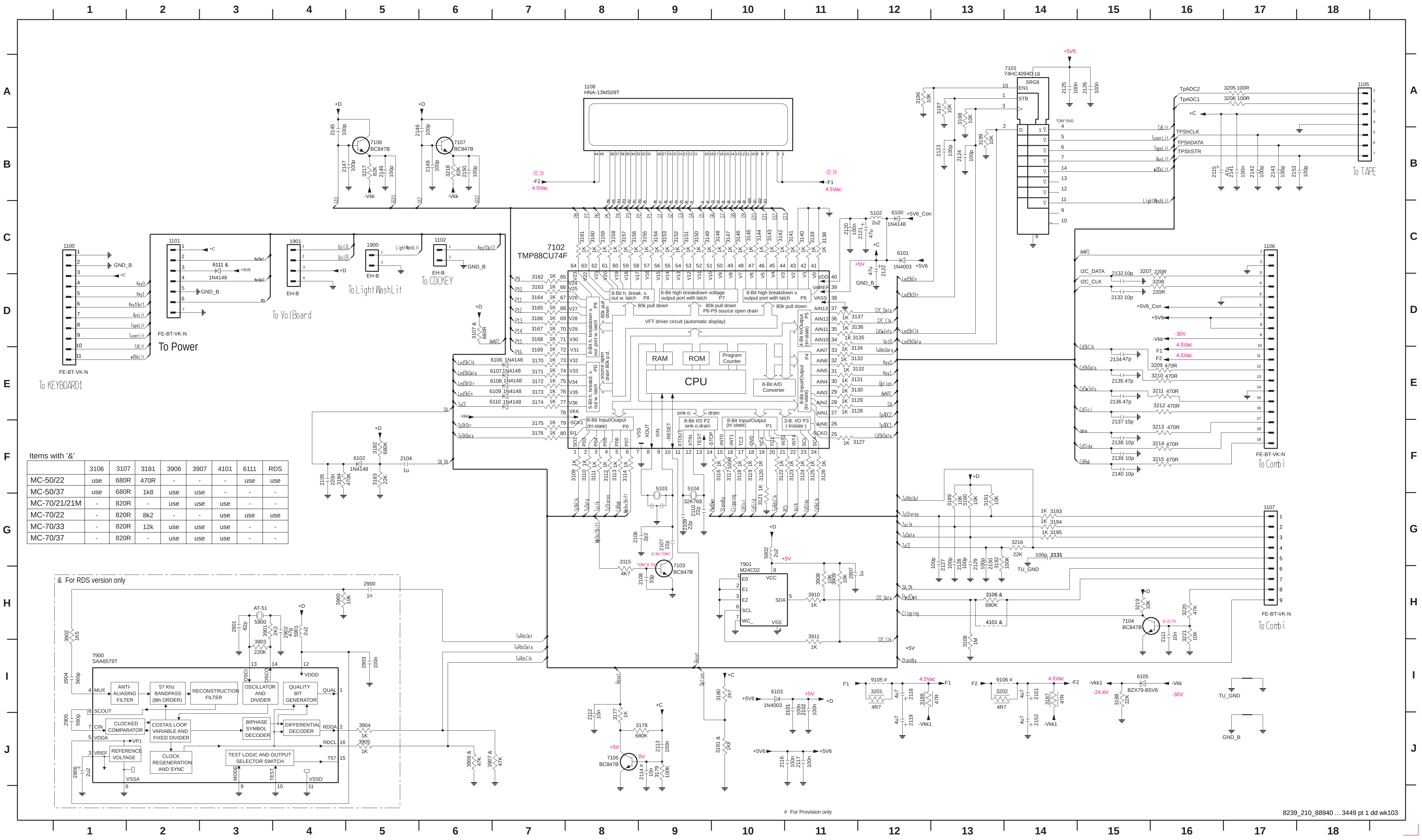
1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
CD1
CD2
CD3
TIMER
SLEEP
DIM
123
ALBUM
AM FM
MW LW
TITLE
R·D·S
NEWS
SMART
RDS
REC
VCD
BASS
INCREDIBLE SURROUND
VOLUME
LEVEL
SHUFFLE
REPEAT
TREBLE
PROGRAM
DISC
ALL
wOOx
1 2 3
13G
12G
11G
a
f
h
j
k
b
g
m
e
r
p
n
c
d
Col
Dp
2G - 9G
S1
S2
S3
S4
1G
B7 B6 B5 B4 B3 B2 B1
B10 B9 B8 B7 B6 B5 B4 B3 B2 B1
B7 B6 B5 B4 B3 B2 B1
B8
TREBLE
B11
B8
BASS
11G
12G
13G

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
P1	-	a	a	a	a	a	a	a	a	R·D·S	ALL	B1	-
P2	-	h	h	h	h	h	h	h	h	NEWS	DISC	B2	-
P3	SLEEP	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	(	PROGRAM	B3	-
P4	CD1	k	k	k	k	k	k	k	k	Z	B1	B4	B1
P5	CD2	b	b	b	b	b	b	b	b	)	B2	B5	B2
P6	CD3	f	f	f	f	f	f	f	f	SMART	B3	B6	B3
P7	-	m	m	m	m	m	m	m	m	RDS	B4	B7	B4
P8	TIMER	g	g	g	g	g	g	g	g	◀	B5	B8	B5
P9	S1	c	c	c	c	c	c	c	c	▶	B6	B9	B6
P10	S2	e	e	e	e	e	e	e	e	REC	B7	B10	B7
P11	S3	r	r	r	r	r	r	r	r	VCD	-	-	INCREDIBLE SURROUND
P12	S4	n	n	n	n	n	n	n	n	wOOx	B8	B11	B8
P13	-	d	d	d	d	d	d	d	d	❶	-	VOLUME	-
P14	-	O(((	DIM	1	ALBUM	AM	∞	MW	TITLE	❷	-	LEVEL	-
P15	-	-	-	2	-	FM	Col	LW	-	❸	-	SHUFFLE	-
P16	-	-	-	3	-	-	Dp	-	-	-	-	REPEAT	-

PIN NO.	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	-	-	-	-	P16	P15	P14	P13	P12	P11	P10	P9	-	-	P8	P7	P6	P5	P4	P3	P2	P1	-	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	-	-	-	-	F1	F1

CIRCUIT DIAGRAM

1100 C1	1107 G17	2102 I11	2108 H9	2113 J9	2118 I12	2123 B13	2128 G13	2133 D15	2138 F15	2143 B17	2149 B5	2900 H5	2905 J1	3108 I13	3113 F8	3118 F10	3123 F11	3128 E11	3133 E11	3138 C11	3143 C10	3148 C10	3153 C9	3158 C8	3163 D7	3168 D7	3173 E7	3178 J9	3183 F5	3189 G13	3194 G14	3199 B13	3207 C15	3212 E16	3217 B5	3900 H4	3905 J5	3910 H11	5104 F9	6101 C12	6107 E7	7101 A14	7106 B5	9106 I13
1101 C2	1108 A8	2104 F5	2109 G9	2114 J9	2119 J12	2124 B13	2129 G13	2134 E15	2139 F15	2145 B4	2150 B6	2901 H3	2906 J1	3109 F8	3114 F8	3119 F10	3124 F11	3129 E11	3134 E11	3139 C11	3144 C10	3149 C9	3154 C9	3159 C8	3164 D7	3169 E7	3174 E7	3179 J9	3184 F4	3190 G13	3195 G14	3201 I12	3208 D16	3213 F16	3218 B6	3901 H3	3906 J6	3911 H11	5900 H3	6102 F5	6108 E7	7102 C7	7107 B6	
1102 C6	1900 C5	2105 F4	2110 G9	2115 B16	2120 C11	2125 A14	2130 G13	2135 E15	2140 F15	2146 B6	2151 I14	2902 H4	2907 H11	3110 F8	3115 G8	3120 F10	3125 F11	3130 E11	3135 D12	3140 C11	3145 C10	3150 C9	3155 C9	3160 C8	3165 D7	3170 E7	3175 F7	3180 I10	3186 I12	3191 G13	3196 A12	3202 I13	3209 E16	3214 F16	3219 H15	3902 H1	3907 J6	4101 H13	5901 H4	6103 I10	6109 E7	7103 H9	7900 I1	
1105 A18	1901 C4	2106 G8	2111 H16	2116 J10	2121 C12	2126 A15	2131 G14	2136 E15	2141 B17	2147 B5	2152 J14	2903 I5	3106 H13	3111 F8	3116 F10	3121 G10	3126 F11	3131 E11	3136 D11	3141 C11	3146 C10	3151 C9	3156 C8	3161 C8	3166 D7	3171 E7	3176 F7	3181 J10	3187 I14	3192 G13	3197 A13	3205 A17	3210 E16	3215 F16	3220 H16	3903 I3	3908 H11	5102 C12	5902 G10	6105 I15	6110 E7	7104 H15	7901 G10	
1106 C17	2101 I11	2107 G9	2112 J8	2117 J11	2122 C12	2127 G13	2132 D15	2137 F15	2142 B17	2148 B6	2153 B17	2904 I1	3107 D6	3112 F8	3117 F10	3122 F10	3127 F12	3132 E12	3137 D11	3142 C10	3147 C10	3152 C9	3157 C8	3162 D7	3167 D7	3172 E7	3177 J8	3182 F5	3188 I15	3193 G14	3198 A13	3206 A17	3211 E16	3216 G14	3221 H16	3904 J5	3909 H11	5103 F9	6100 C12	6106 E7	6111 C3	7105 J8	9105 I12	


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
1108
HNA-13MS09T
7102
TMP88CU74F
7101
74HC4094D
SRG8
CPU
RAM
ROM
Program Counter
8-Bit A/D Converter
VFT driver circuit (automatic display)
8-Bit high breakdown voltage output port with latch P7
8-Bit high breakdown v. output port with latch P6
8-Bit h. break. v. out w. latch P8
80k pull down
P6-P9 source open drain
8-Bit Input/Output (tri-state) P0
8-Bit I/O P2 sink o.drain
8-Bit Input/Output (tri state) P1
3-B. I/O P3 (tristate)
8-Bit Input/Output (tri-state) P4
4-Bit Input/Output (tri-state) P5
7106
BC847B
7107
BC847B
7103
BC847B
7104
BC847B
7105
BC847B
7901
M24C02
7900
SAA6579T
ANTI-ALIASING FILTER
57 Khz BANDPASS (8th ORDER)
RECONSTRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
REFERENCE VOLTAGE
CLOCK REGENERATION AND SYNC
TEST LOGIC AND OUTPUT SELECTOR SWITCH
& For RDS version only
1100
FE-BT-VK-N
To KEYBOARD1
1101
FE-BT-VK-N
To Power
1901
EH-B
To VolBoard
1900
EH-B
To LightWashLit
1102
EH-B
To CDCKEY
1105
To TAPE
1106
FE-BT-VK-N
To Combi
1107
FE-BT-VK-N
To Combi
TU_GND
GND_B
+5V6
-Vkk
-22.2V
4.5Vac
-30V
-24.4V
"ON" 5V0
5103
5104
32K768
5900
5901
5902
5102
6100
6101
1N4003
6103
1N4003
6105
BZX79-B5V6
6102
1N4148
9105 #
9106 #

Items with '&'

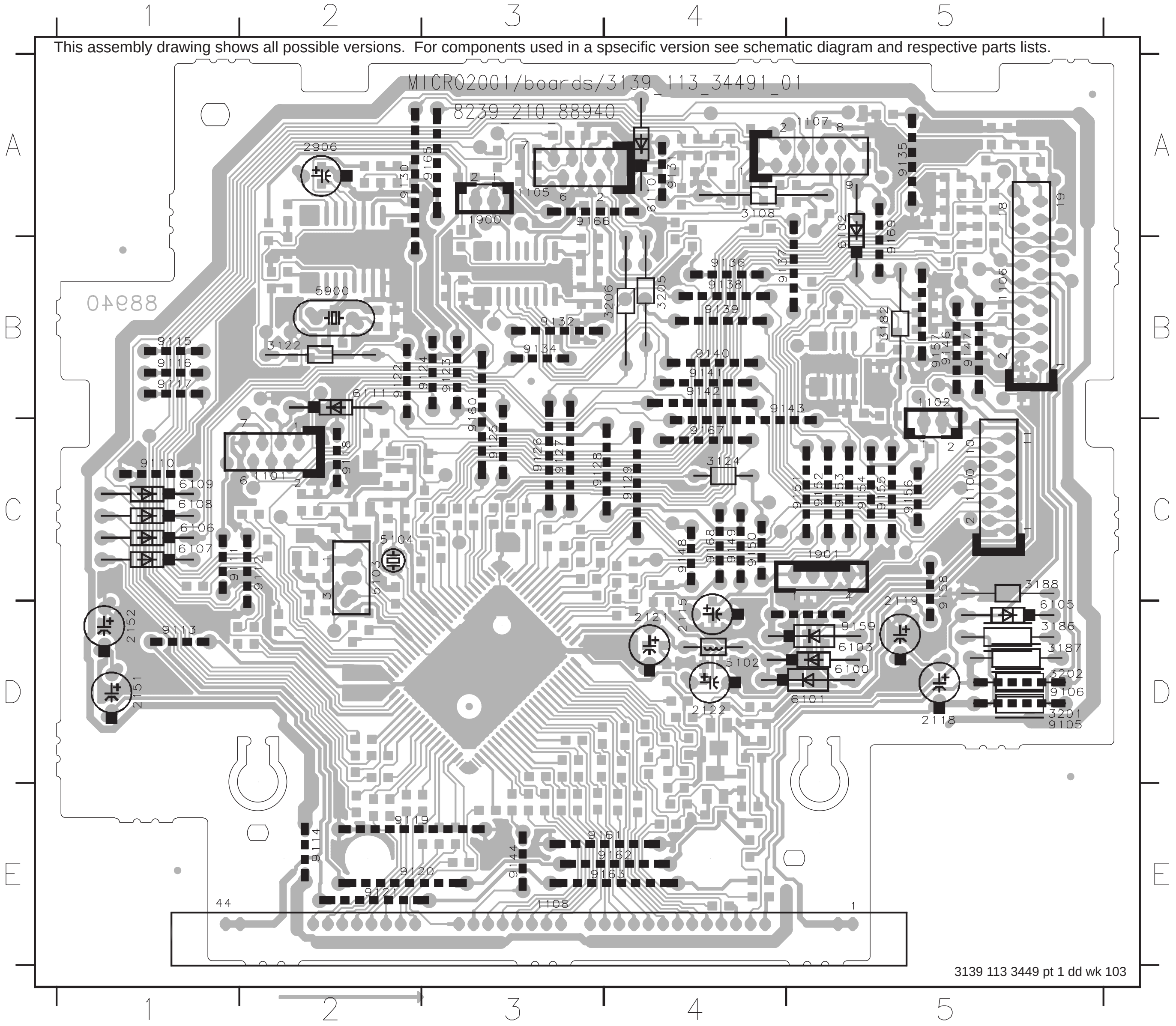
	3106	3107	3181	3906	3907	4101	6111	RDS
MC-50/22	use	680R	470R	-	-	-	use	use
MC-50/37	use	680R	1k8	use	use	-	-	-
MC-70/21/21M	-	820R	-	use	use	use	-	-
MC-70/22	-	820R	8k2	-	-	use	use	use
MC-70/33	-	820R	12k	use	use	use	-	-
MC-70/37	-	820R	-	use	use	use	-	-

# For Provision only

COMPONENT LAYOUT

1100	C5	1901	C5	2906	A2	3201	D5	6100	D5	6109	C1	9113	D1	9121	E2	9129	C4	9138	B4	9147	B5	9155	C5	9163	E4
1101	C2	2115	D4	3108	A4	3202	D5	6101	D5	6110	A4	9114	E2	9122	B2	9130	A2	9139	B4	9148	C4	9156	C5	9165	A3
1102	B5	2118	D5	3122	B2	3205	B4	6102	A5	6111	B2	9115	B1	9123	B3	9131	A4	9140	B4	9149	C4	9157	B5	9166	A3
1105	A3	2119	C5	3124	C4	3206	B4	6103	D5	9105	D5	9116	B1	9124	B3	9132	B3	9141	B4	9150	C4	9158	C5	9167	C4
1106	B5	2121	D4	3182	B5	5102	D4	6105	D5	9106	D5	9117	B1	9125	C3	9134	B3	9142	B4	9151	C5	9159	D5	9168	C4
1107	A5	2122	D4	3186	D5	5103	C2	6106	C1	9110	C1	9118	C2	9126	C3	9135	A5	9143	B5	9152	C5	9160	B3	9169	B5
1108	E3	2151	D1	3187	D5	5104	C2	6107	C1	9111	C1	9119	E2	9127	C3	9136	B4	9144	E3	9153	C5	9161	E4		
1900	A3	2152	D1	3188	C5	5900	B2	6108	C1	9112	C2	9120	E2	9128	C3	9137	B4	9146	B5	9154	C5	9162	E4		

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.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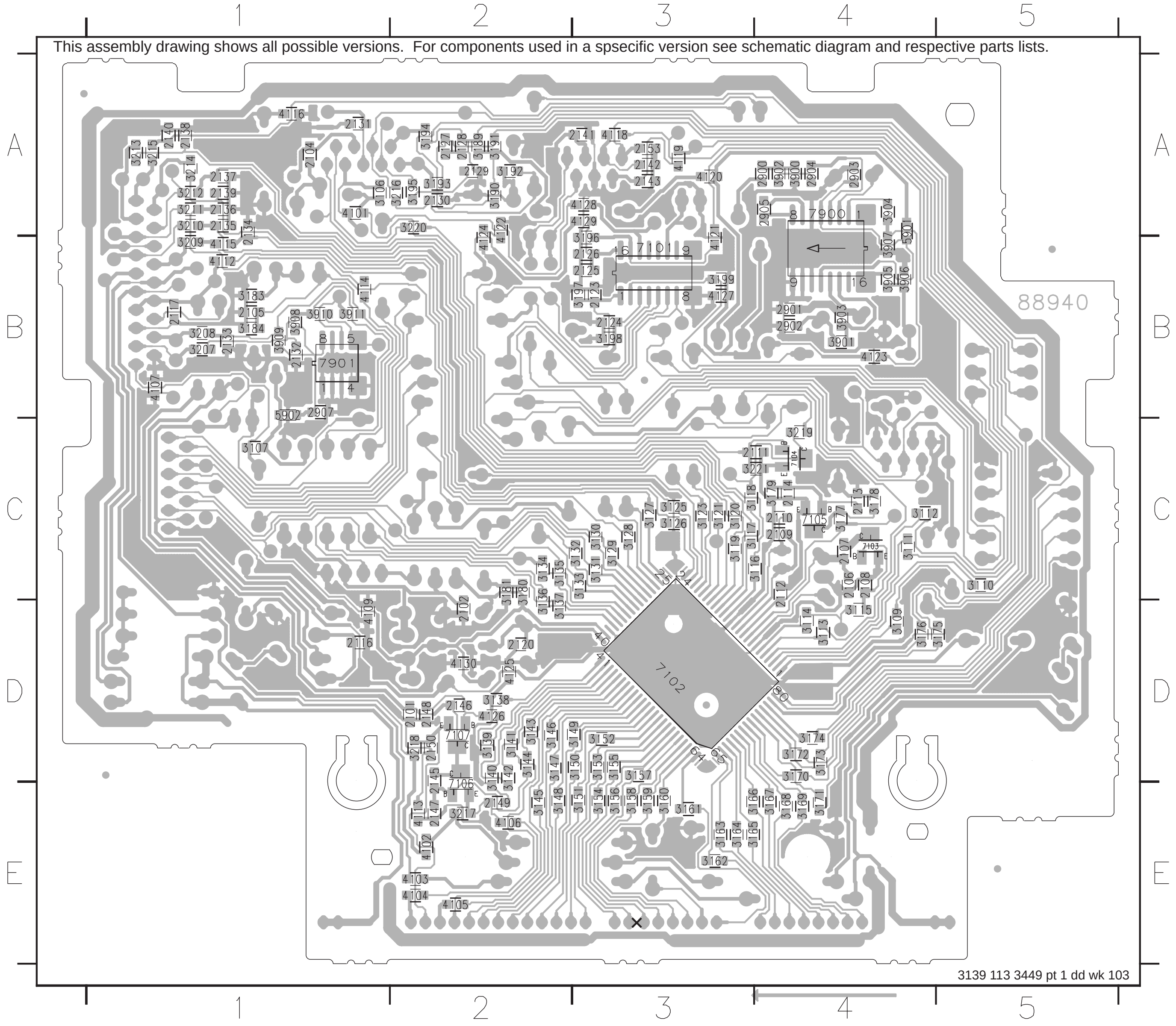
3139 113 3449 pt 1 dd wk 103

CHIP LAYOUT

2101	D2	2120	D2	2137	A1	2901	B4	3116	C4	3133	C3	3148	E2	3163	E3	3178	C4	3198	B3	3220	A2	4102	E2	4121	B3	7104	C4
2102	D2	2123	B3	2138	A1	2902	B4	3117	C3	3134	C2	3149	D3	3164	E3	3179	C4	3199	B3	3221	C4	4103	E2	4122	A2	7105	C4
2104	A1	2124	B3	2139	A1	2903	A4	3118	C3	3135	C2	3150	D3	3165	E3	3180	C2	3207	B1	3900	A4	4104	E2	4123	B4	7106	E2
2105	B1	2125	B3	2140	A1	2904	A4	3119	C3	3136	D2	3151	E3	3166	E3	3181	C2	3208	B1	3901	B4	4105	E2	4124	B2	7107	D2
2106	C4	2126	B3	2141	A3	2905	A4	3120	C3	3137	D2	3152	D3	3167	E4	3183	B1	3209	B1	3902	A4	4106	E2	4125	D2	7900	A4
2107	C4	2127	A2	2142	A3	2907	B1	3121	C3	3138	D2	3153	D3	3168	E4	3184	B1	3210	A1	3903	B4	4107	B1	4126	D2	7901	B1
2108	C4	2128	A2	2143	A3	3106	A1	3123	C3	3139	D2	3154	E3	3169	E4	3189	A2	3211	A1	3904	A4	4109	D1	4127	B3		
2109	C4	2129	A2	2145	D2	3107	C1	3125	C3	3140	D2	3155	D3	3170	D4	3190	A2	3212	A1	3905	B4	4112	B1	4128	A3		
2110	C4	2130	A2	2146	D2	3109	D4	3126	C3	3141	D2	3156	E3	3171	E4	3191	A2	3213	A1	3906	B4	4113	E2	4129	A3		
2111	C4	2131	A1	2147	E2	3110	C5	3127	C3	3142	D2	3157	D3	3172	D4	3192	A2	3214	A1	3907	B4	4114	B1	4130	D2		
2112	C4	2132	B1	2148	D2	3111	C4	3128	C3	3143	D2	3158	E3	3173	D4	3193	A2	3215	A1	3908	B1	4115	B1	5901	A4		
2113	C4	2133	B1	2149	E2	3112	C4	3129	C3	3144	D2	3159	E3	3174	D4	3194	A2	3216	A2	3909	B1	4116	A1	5902	B1		
2114	C4	2134	A1	2150	D2	3113	D4	3130	C3	3145	E2	3160	E3	3175	D5	3195	A2	3217	E2	3910	B1	4118	A3	7101	B3		
2116	D1	2135	A1	2153	A3	3114	D4	3131	C3	3146	D2	3161	E3	3176	D4	3196	B3	3218	D2	3911	B1	4119	A3	7102	D3		
2117	B1	2136	A1	2900	A4	3115	D4	3132	C3	3147	D2	3162	E3	3177	C4	3197	B3	3219	C4	4101	A1	4120	A3	7103	C4		

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.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ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

MISCELLANEOUS

1100	4822 267 11039	Flex Socket 11pin Vert.
1101	4822 267 10953	Flex Socket 7pin Vert.
1105	4822 267 10953	Flex Socket 7pin Vert.
1106	4822 265 11553	Flex Socket 19pin Vert.
1107	2422 025 14518	Flex Socket 9pin Vert.
1108	3139 110 52680	FTD Display HNA-13MS09T

CAPACITORS

2101	4822 126 14305	100nF 10% 16V
2102	4822 126 14305	100nF 10% 16V
2104	3198 017 41050	1µF +80/-20% 10V
2105	4822 126 13879	220nF +80/-20% 16V
2106	4822 126 14223	2,2pF +/-0,25pF 50V
2107	4822 122 33761	22pF 5% 50V
2108	4822 126 11671	33pF 5% 50V
2109	4822 122 33761	22pF 5% 50V
2110	4822 122 33761	22pF 5% 50V
2111	5322 126 11583	10nF 10% 50V
2112	5322 126 11583	10nF 10% 50V
2113	4822 126 14305	100nF 10% 16V
2115	4822 124 40433	47µF 20% 25V
2116	4822 126 14305	100nF 10% 16V
2117	4822 126 14305	100nF 10% 16V
2118	4822 124 40769	4,7µF 20% 100V
2119	4822 124 40769	4,7µF 20% 100V
2120	4822 126 14305	100nF 10% 16V
2121	4822 124 40433	47µF 20% 25V
2122	4822 124 40433	47µF 20% 25V
2123	4822 122 31765	100pF 2% 63V
2124	4822 122 31765	100pF 2% 63V
2125	4822 126 14305	100nF 10% 16V
2126	4822 126 14305	100nF 10% 16V
2127	4822 122 31765	100pF 2% 63V
2128	4822 122 31765	100pF 2% 63V
2129	4822 122 31765	100pF 2% 63V
2130	4822 122 31765	100pF 2% 63V
2131	4822 122 31765	100pF 2% 63V
2132	4822 122 33741	10pF 10% 50V
2133	4822 122 33741	10pF 10% 50V
2134	4822 122 33777	47pF 5% 63V
2135	4822 122 33777	47pF 5% 63V
2136	4822 122 33777	47pF 5% 63V
2137	4822 122 33741	10pF 10% 50V
2138	4822 122 33741	10pF 10% 50V
2139	4822 122 33741	10pF 10% 50V
2140	4822 122 33741	10pF 10% 50V
2141	4822 126 14305	100nF 10% 16V
2142	4822 122 31765	100pF 2% 63V
2143	4822 122 31765	100pF 2% 63V
2145	4822 122 31765	100pF 2% 63V
2146	4822 122 31765	100pF 2% 63V
2147	4822 122 31765	100pF 2% 63V
2148	4822 122 31765	100pF 2% 63V
2149	4822 122 31765	100pF 2% 63V
2150	4822 122 31765	100pF 2% 63V
2151	4822 124 40769	4,7µF 20% 100V
2152	4822 124 40769	4,7µF 20% 100V
2153	4822 122 31765	100pF 2% 63V
2900	3198 016 31020	1nF 5% 25V
2901	4822 126 14226	82pF 5% 50V
2902	4822 122 33777	47pF 5% 63V
2903	4822 126 14305	100nF 10% 16V
2904	4822 126 14249	560pF 10% 50V
2905	4822 126 14249	560pF 10% 50V
2906	4822 124 22652	2,2µF 20% 50V
2907	3198 017 41050	1µF +80/-20% 10V

RESISTORS

3106	4822 051 30684	680k 5% 0,062W
3107	4822 051 30681	680R 5% 0,062W
3108	4822 116 83866	1M 5% 0,5W
3109	4822 051 30102	1k 5% 0,062W
3110	4822 051 30102	1k 5% 0,062W
3111	4822 051 30102	1k 5% 0,062W
3112	4822 051 30102	1k 5% 0,062W
3113	4822 051 30102	1k 5% 0,062W
3114	4822 051 30102	1k 5% 0,062W
3115	4822 051 30472	4k7 5% 0,062W
3116	4822 051 30102	1k 5% 0,062W
3117	4822 051 30101	100R 5% 0,062W
3118	4822 051 30102	1k 5% 0,062W
3119	4822 051 30102	1k 5% 0,062W
3120	4822 051 30102	1k 5% 0,062W
3121	4822 051 30102	1k 5% 0,062W
3122	4822 050 11002	1k 1% 0,4W
3123	4822 051 30102	1k 5% 0,062W
3124	4822 050 11002	1k 1% 0,4W
3125	4822 051 30102	1k 5% 0,062W
3126	4822 051 30102	1k 5% 0,062W
3127	4822 051 30102	1k 5% 0,062W
3128	4822 051 30102	1k 5% 0,062W
3129	4822 051 30102	1k 5% 0,062W
3130	4822 051 30102	1k 5% 0,062W
3131	4822 051 30102	1k 5% 0,062W
3132	4822 051 30102	1k 5% 0,062W
3133	4822 051 30102	1k 5% 0,062W
3134	4822 051 30102	1k 5% 0,062W
3135	4822 051 30102	1k 5% 0,062W
3136	4822 051 30102	1k 5% 0,062W
3137	4822 051 30102	1k 5% 0,062W
3138	4822 051 30102	1k 5% 0,062W
3139	4822 051 30102	1k 5% 0,062W
3140	4822 051 30102	1k 5% 0,062W
3141	4822 051 30102	1k 5% 0,062W

3142	4822 051 30102	1k 5% 0,062W
3143	4822 051 30102	1k 5% 0,062W
3144	4822 051 30102	1k 5% 0,062W
3145	4822 051 30102	1k 5% 0,062W
3146	4822 051 30102	1k 5% 0,062W
3147	4822 051 30102	1k 5% 0,062W
3148	4822 051 30102	1k 5% 0,062W
3149	4822 051 30102	1k 5% 0,062W
3150	4822 051 30102	1k 5% 0,062W
3151	4822 051 30102	1k 5% 0,062W
3152	4822 051 30102	1k 5% 0,062W
3153	4822 051 30102	1k 5% 0,062W
3154	4822 051 30102	1k 5% 0,062W
3155	4822 051 30102	1k 5% 0,062W
3156	4822 051 30102	1k 5% 0,062W
3157	4822 051 30102	1k 5% 0,062W
3158	4822 051 30102	1k 5% 0,062W
3159	4822 051 30102	1k 5% 0,062W
3160	4822 051 30102	1k 5% 0,062W
3161	4822 051 30102	1k 5% 0,062W
3162	4822 051 30102	1k 5% 0,062W
3163	4822 051 30102	1k 5% 0,062W
3164	4822 051 30102	1k 5% 0,062W
3165	4822 051 30102	1k 5% 0,062W
3166	4822 051 30102	1k 5% 0,062W
3167	4822 051 30102	1k 5% 0,062W
3168	4822 051 30102	1k 5% 0,062W
3169	4822 051 30102	1k 5% 0,062W
3170	4822 051 30102	1k 5% 0,062W
3171	4822 051 30102	1k 5% 0,062W
3172	4822 051 30102	1k 5% 0,062W
3173	4822 051 30102	1k 5% 0,062W
3174	4822 051 30102	1k 5% 0,062W
3175	4822 051 30102	1k 5% 0,062W
3176	4822 051 30102	1k 5% 0,062W
3177	4822 051 30102	1k 5% 0,062W
3178	4822 051 30684	680k 5% 0,062W
3179	4822 117 13632	100k 1% 0.62W
3180	4822 051 30272	2k7 5% 0,062W
3181	4822 051 30471	470R 5% 0,062W /22
3181	4822 117 12903	1k8 5% 0,062W /37
3182	4822 116 52298	680k 5% 0,5W
3183	4822 051 30223	22k 5% 0,062W
3184	4822 051 30474	470k 5% 0,062W
3186	4822 052 10479	47R 5% 0,33W
3187	4822 052 10479	47R 5% 0,33W
3188	4822 116 52257	22k 5% 0,5W
3189	4822 051 30103	10k 5% 0,062W
3190	4822 051 30103	10k 5% 0,062W
3191	4822 051 30103	10k 5% 0,062W
3192	4822 117 13632	100k 1% 0.62W
3193	4822 051 30102	1k 5% 0,062W
3194	4822 051 30102	1k 5% 0,062W
3195	4822 051 30102	1k 5% 0,062W
3196	4822 051 30103	10k 5% 0,062W
3197	4822 051 30103	10k 5% 0,062W
3198	4822 051 30103	10k 5% 0,062W
3199	4822 051 30103	10k 5% 0,062W
3201	4822 052 10478	4R7 5% 0,33W
3202	4822 052 10478	4R7 5% 0,33W
3205	4822 116 52175	100R 5% 0,5W
3206	4822 116 52175	100R 5% 0,5W
3207	4822 051 30221	220R 5% 0,062W
3208	4822 051 30221	220R 5% 0,062W
3209	4822 051 30471	470R 5% 0,062W
3210	4822 051 30471	470R 5% 0,062W
3211	4822 051 30471	470R 5% 0,062W
3212	4822 051 30471	470R 5% 0,062W
3213	4822 051 30471	470R 5% 0,062W
3214	4822 051 30471	470R 5% 0,062W
3215	4822 051 30471	470R 5% 0,062W
3216	4822 051 30223	22k 5% 0,062W
3217	4822 117 12864	82k 5% 0,6W
3218	4822 117 12864	82k 5% 0,6W
3219	4822 051 30103	10k 5% 0,062W
3220	4822 117 12925	47k 1% 0.063W
3221	4822 051 30103	10k 5% 0,062W
3900	4822 051 30103	10k 5% 0,062W
3901	4822 051 30222	2k2 5% 0,062W
3902	4822 051 30152	1k5 5% 0,062W
3903	4822 117 12891	220k 5% 0,062W
3904	4822 051 30102	1k 5% 0,062W
3905	4822 051 30102	1k 5% 0,062W
3906	4822 117 12925	47k 1% 0.063W
3907	4822 117 12925	47k 1% 0.063W
3908	4822 051 30103	10k 5% 0,062W
3909	4822 051 30103	10k 5% 0,062W
3910	4822 051 30102	1k 5% 0,062W
3911	4822 051 30102	1k 5% 0,062W
4102	4822 051 30008	0R Jumper 0603
4103	4822 051 30008	0R Jumper 0603
4104	4822 051 30008	0R Jumper 0603
4105	4822 051 30008	0R Jumper 0603
4106	4822 051 30008	0R Jumper 0603
4107	4822 051 30008	0R Jumper 0603
4109	4822 051 30008	0R Jumper 0603
4112	4822 051 30008	0R Jumper 0603
4113	4822 051 30008	0R Jumper 0603
4114	4822 051 30008	0R Jumper 0603
4115	4822 051 30008	0R Jumper 0603
4116	4822 051 30008	0R Jumper 0603
4118	4822 051 30008	0R Jumper 0603
4119	4822 051 30008	0R Jumper 0603
4120	4822 051 30008	0R Jumper 0603

ELECTRICAL PARTS LIST - FRONT DISPLAY BOARD

RESISTORS

4121	4822 051 30008	0R Jumper 0603
4122	4822 051 30008	0R Jumper 0603
4123	4822 051 30008	0R Jumper 0603
4124	4822 051 30008	0R Jumper 0603
4125	4822 051 30008	0R Jumper 0603
4126	4822 051 30008	0R Jumper 0603
4127	4822 051 30008	0R Jumper 0603
4128	4822 051 30008	0R Jumper 0603
4129	4822 051 30008	0R Jumper 0603
4130	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5102	4822 157 62552	Coil 2,2µH 5%
5103	5322 242 73686	Ceram Resonator 12MHz
5104	4822 242 70938	X'tal Resonator 32,768kHz
5900	4822 242 72195	Quartz 4,332MHz
5901	4822 157 10586	Coil 2,2µH 10% 0805
5902	4822 157 10586	Coil 2,2µH 10% 0805

DIODES

6100	4822 130 30621	1N4148
6101	4822 130 31878	1N4003G
6102	4822 130 30621	1N4148
6103	4822 130 31878	1N4003G
6105	4822 130 34173	BZX79-B5V6
6106	4822 130 30621	1N4148
6107	4822 130 30621	1N4148
6108	4822 130 30621	1N4148
6109	4822 130 30621	1N4148
6110	4822 130 30621	1N4148
6111	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 15449	74HC4094D
7102	3139 110 52810	TMP88CU74YF "MC50S52811"
7103	4822 130 60511	BC847B
7104	4822 130 60511	BC847B
7105	4822 130 60511	BC847B
7106	4822 130 60511	BC847B
7107	4822 130 60511	BC847B
7900	9352 679 67118	SAA6579T/V1/M4
7901	9322 145 26668	M24C02-WMN6

Note: Only the parts mentioned in this list are normal service sparts parts.

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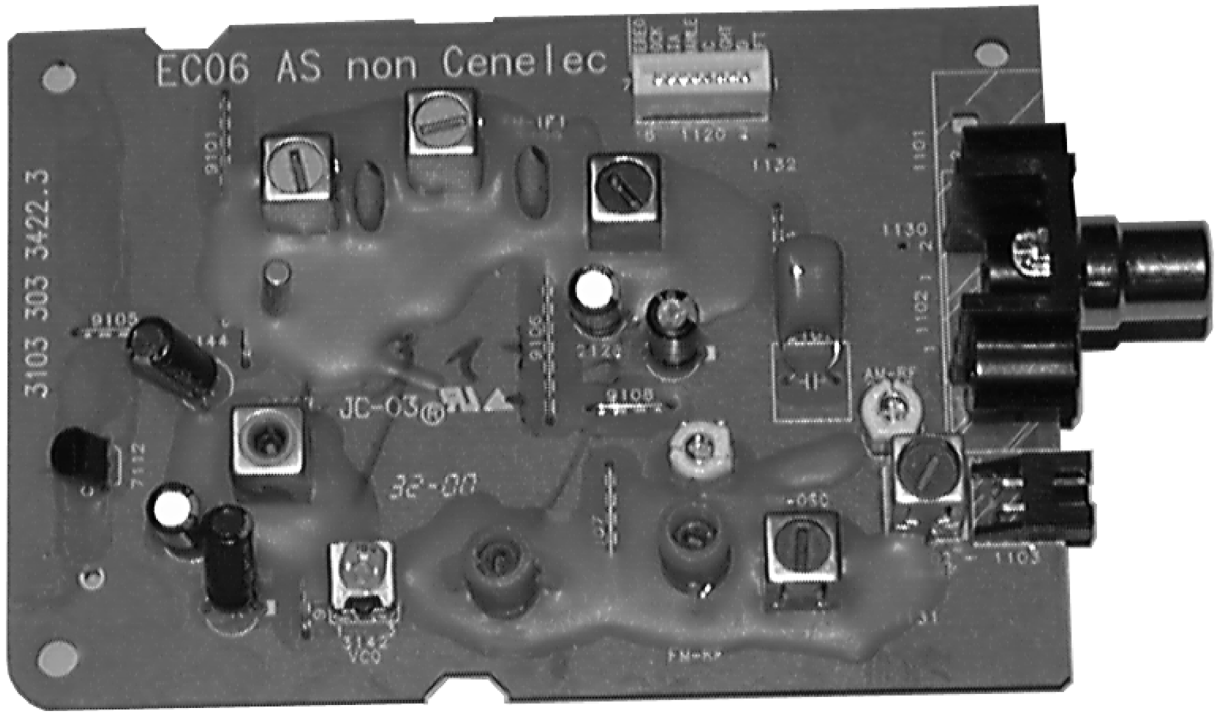
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3103 303 3422.3
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9105
9106
9108
1120
1132
1130
1101
1102
1103
7112
3142
VCO
JC-03
32-00
AM-RF
OSC
FM-RF
IF1

ECO6 Tuner Board

version: ***SYSTEMS non-CENELEC***

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Component Layout..7A-3
Adjustment table 7A-3
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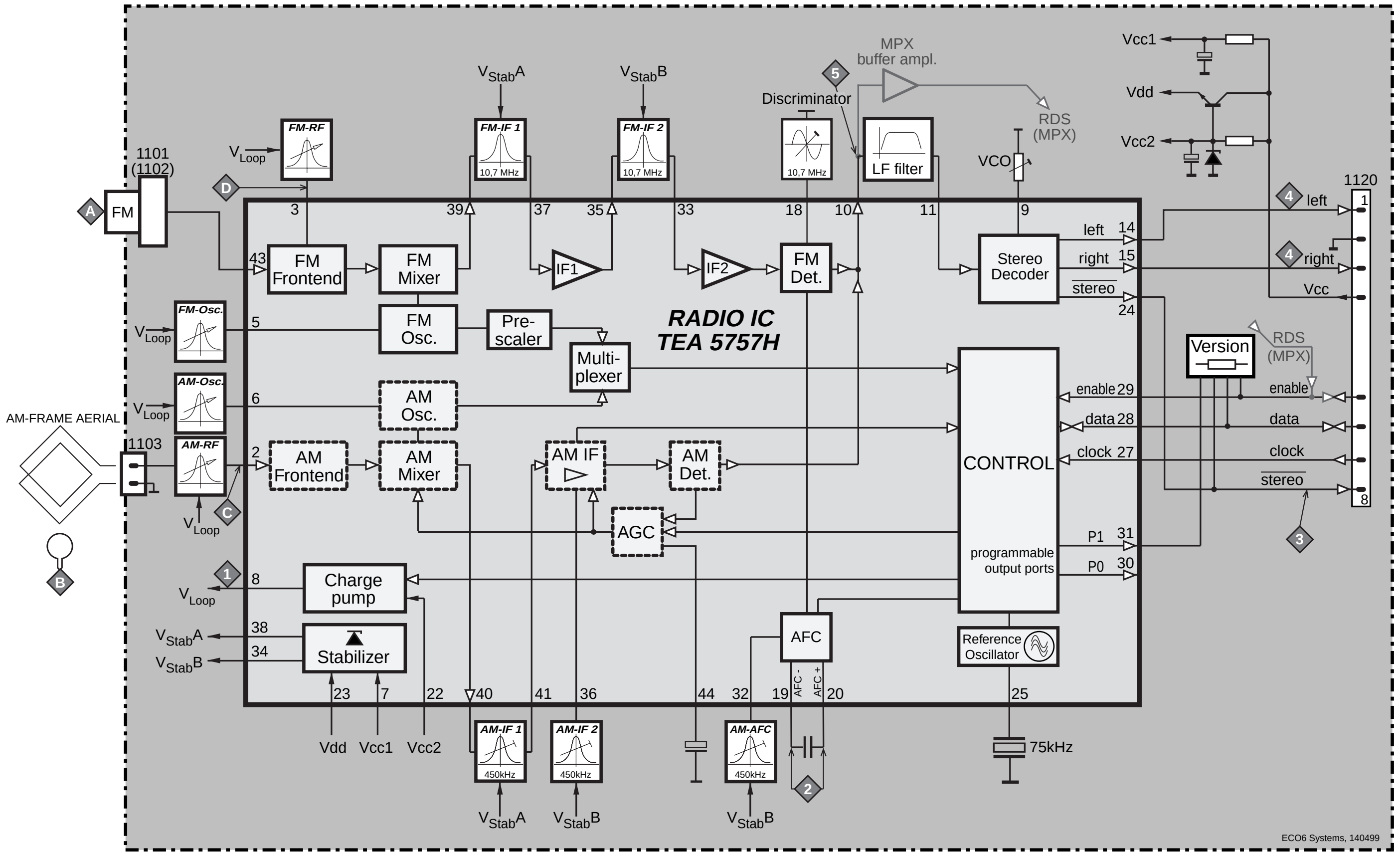
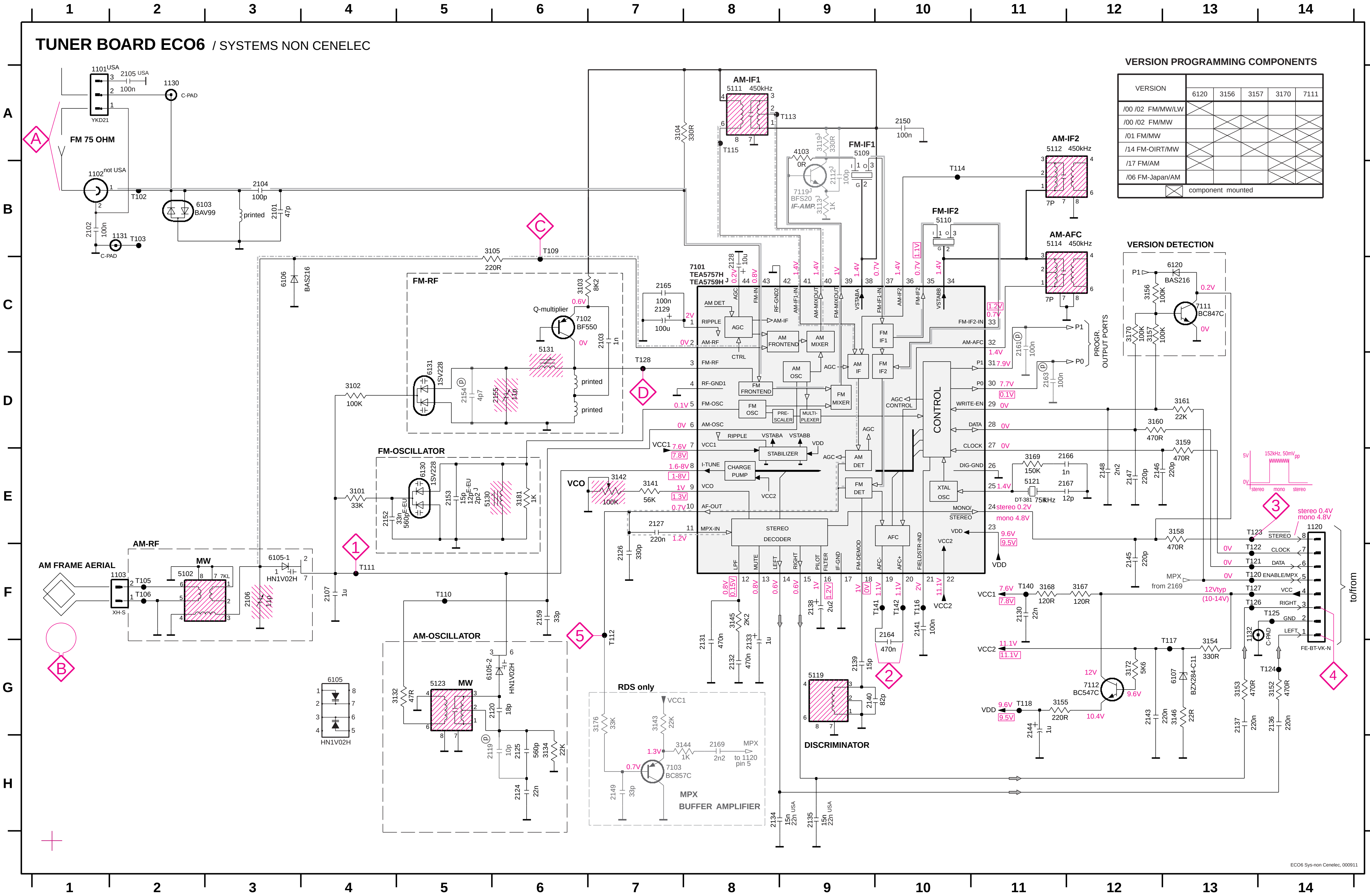
BLOCK DIAGRAM

TUNER BOARD
ECO 6 Systems


RADIO IC
TEA 5757H
FM Frontend
FM Mixer
FM Osc.
Pre-scaler
Multi-plexer
IF1
IF2
FM Det.
Stereo Decoder
AM Osc.
AM Frontend
AM Mixer
AM IF
AM Det.
AGC
CONTROL
programmable output ports
Charge pump
Stabilizer
AFC
Reference Oscillator
LF filter
Discriminator
MPX buffer ampl.
RDS (MPX)
VCO
Version
FM-RF
FM-IF 1
FM-IF 2
10,7 MHz
FM-Osc.
AM-Osc.
AM-RF
AM-IF 1
AM-IF 2
AM-AFC
450kHz
75kHz
AM-FRAME AERIAL
FM
1101 (1102)
1103
1120
V_Loop
V_Stab A
V_Stab B
Vdd
Vcc1
Vcc2
Vcc
left
right
stereo
enable
data
clock
P1
P0
AFC -
AFC +
A
B
C
D
1
2
3
4
5
ECO6 Systems, 140499

TUNER BOARD ECO6 / SYSTEMS NON CENELEC


FM 75 OHM
AM FRAME AERIAL
AM-RF
MW
FM-RF
Q-multiplier
FM-OSCILLATOR
AM-OSCILLATOR
VCO
RDS only
MPX BUFFER AMPLIFIER
AM-IF1
FM-IF1
AM-IF2
FM-IF2
AM-AFC
DISCRIMINATOR
7101 TEA5757H TEA5759H
CONTROL
STEREO DECODER
AM FRONTEND
AM MIXER
FM FRONTEND
FM MIXER
AM OSC
FM OSC
PRE-SCALER
MULTI-PLEXER
STABILIZER
CHARGE PUMP
XTAL OSC
AM DET
FM DET
AFC
VERSION DETECTION
PROGR. OUTPUT PORTS
to/from
FE-BT-VK-N
ECO6 Sys-non Cenelec, 000911

VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒
/06 FM-Japan/AM				☒	☒

☒ component mounted

LEGEND

ⓟ...for provision only
USA ... for USA version only
E-EU ... for East European version only
J ... for Japanese version only

Ⓥ EVM

...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while set is tuned to a strong transmitter

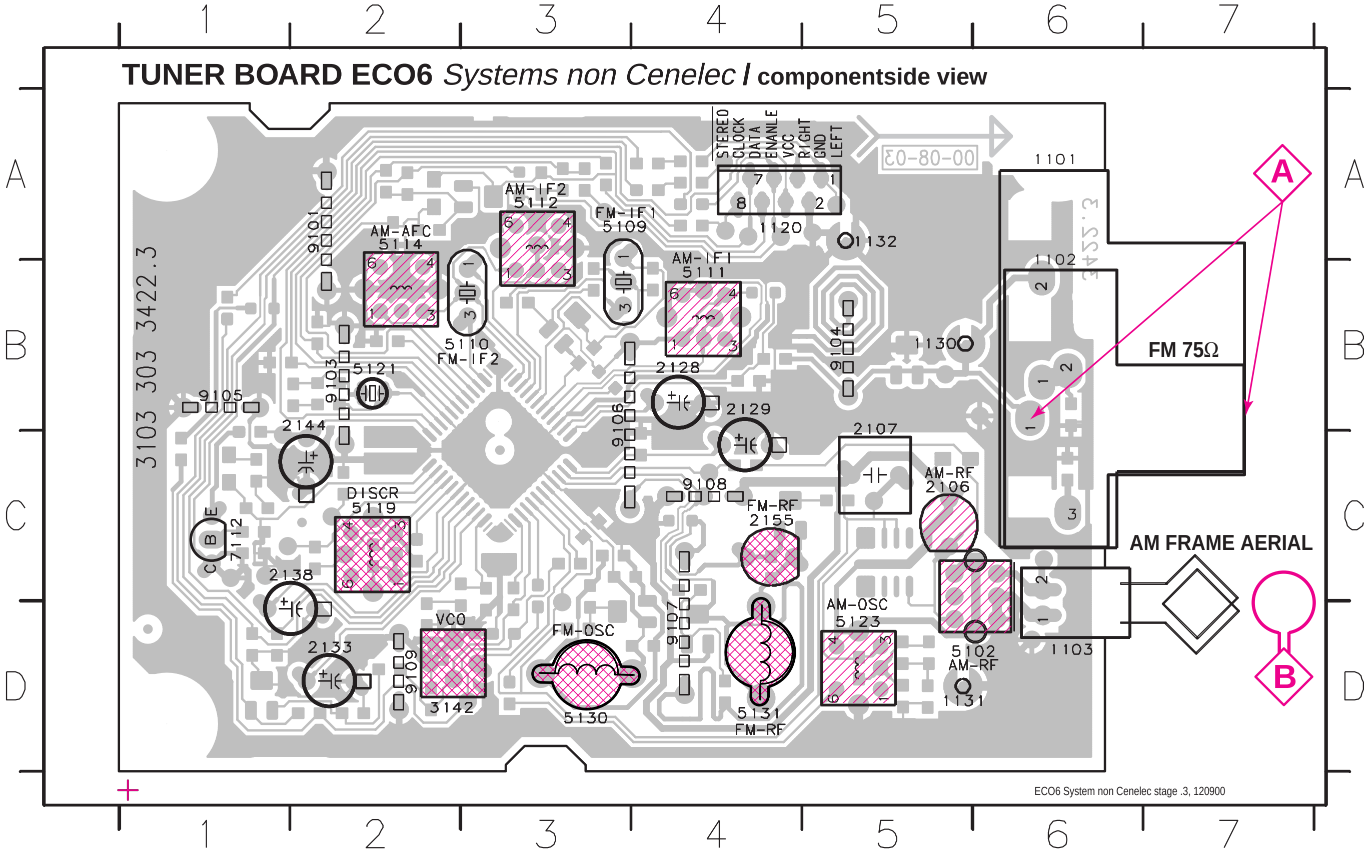
Signal path

- FM
- AM
- MPX (Audio Frequency)
- AF - left/right

1101	A1
1102	B1
1103	F2
1120	E14
1130	A2
1131	B2
1132	G13
2101	B3
2102	B1
2103	C7
2104	B3
2105	A2
2106	F3
2107	F4
2119	H6
2120	G6
2124	H6
2125	H6
2126	F7
2127	E7
2128	C8
2129	C7
2130	F11
2131	G8
2132	G8
2133	G8
2134	H8
2135	H9
2136	G14
2137	G13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	F12
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2152	E4
2153	E5
2154	D5
2155	D5
2159	F6
2161	C11
2163	D11
2164	F10
2165	C7
2166	E11
2167	E11
2169	H8
3101	E4
3102	D4
3103	C6
3104	A7
3105	B6
3132	G5
3134	H6
3141	E7
3142	E7
3143	G7
3144	H7
3145	F8
3146	G13
3152	G14
3153	G13
3154	G13
3155	G11
3156	C12
3157	C12
3158	E13
3159	D13
3160	D12
3161	D13
3167	F12
3168	F11
3169	E11
3170	C12
3172	G12
3176	G7
3181	E6
5102	F2
5109	B9
5110	B10
5111	A8
5112	A11
5114	B11
5119	G9
5121	E11
5123	G5
5130	E5
5131	C6
6103	B2
6105-1	F3
6105-2	G5
6106	C3
6107	G13
6120	C13
6130	E5
6131	D5
7101	C8
7102	C6
7103	H7
7111	C13
7112	G12
T102	B2
T103	B2
T105	F2
T106	F2
T109	B6
T110	F5
T111	F4
T112	F7
T113	A8
T114	B10
T115	A8
T116	F10
T117	G13
T118	G11
T120	F13
T121	F13
T122	F13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T128	D7
T140	F11
T141	F10
T142	F10

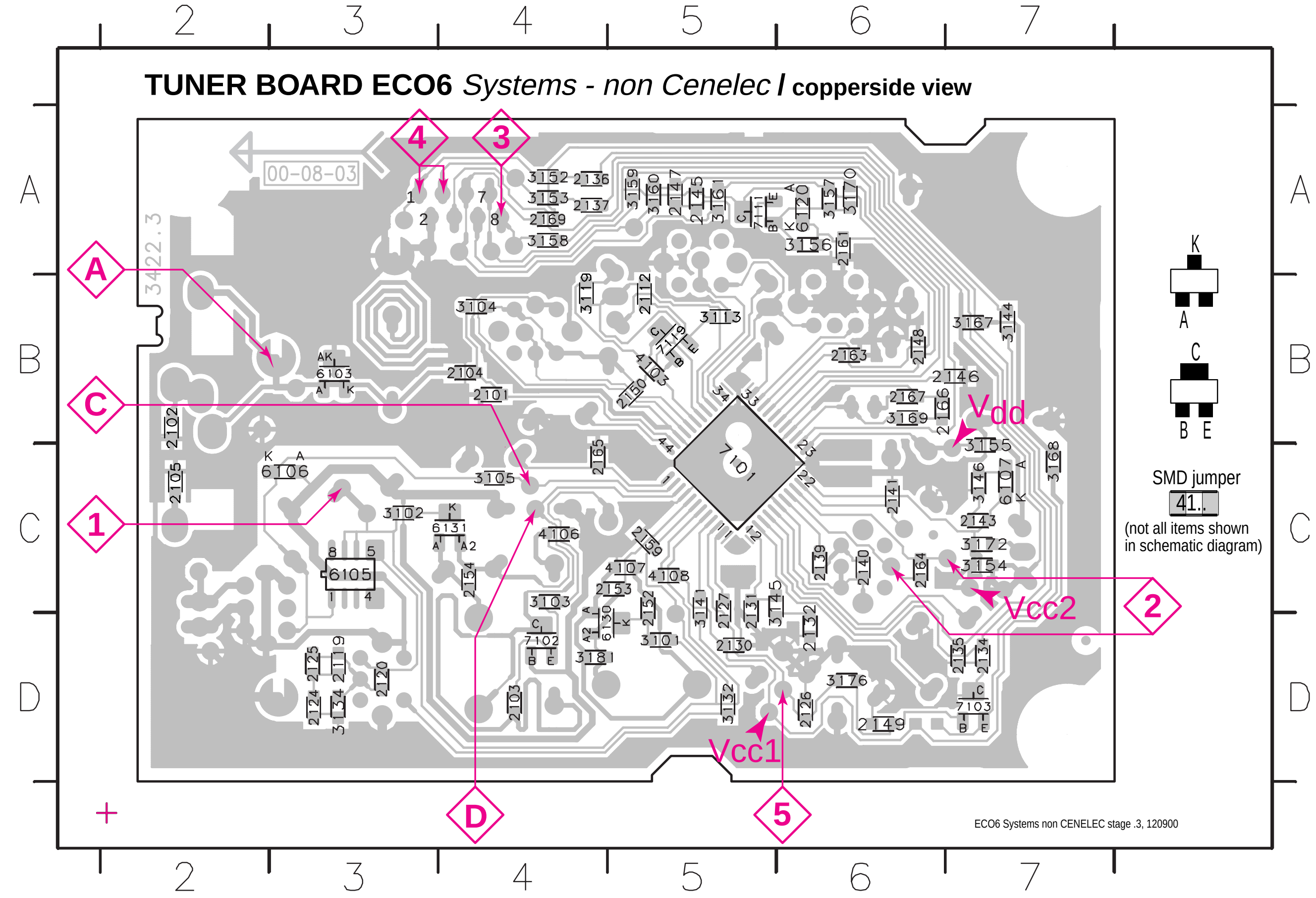
1101	A6	1120	A4	1132	A5	2128	C4	2138	C2	3142	D2	5110	B3	5114	A2	5123	D5	7112	C1	9104	B5	9107	D4
1102	B6	1130	B5	2106	C5	2129	B4	2144	B2	5102	D6	5111	B4	5119	C2	5130	D3	9101	A2	9105	B1	9108	C4
1103	D6	1131	D5	2107	B5	2133	D2	2155	C4	5109	A3	5112	A3	5121	B2	5131	D4	9103	B2	9106	B3	9109	D2

TUNER BOARD ECO6 *Systems non Cenelec* / componentside view


1
2
3
4
5
6
7
A
B
C
D
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
1120
1132
1101
1102
1130
1103
1131
AM-IF2
5112
FM-IF1
5109
AM-AFC
5114
AM-IF1
5111
5110
FM-IF2
5121
9101
9103
9104
9105
9106
9107
9108
9109
2128
2129
2144
2107
AM-RF
2106
DISCR
5119
FM-RF
2155
7112
2138
2133
VCO
3142
FM-OSC
5130
5131
FM-RF
AM-OSC
5123
5102
AM-RF
3103 303 3422.3
FM 75Ω
AM FRAME AERIAL
A
B
ECO6 System non Cenelec stage .3, 120900

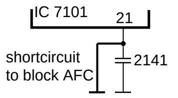
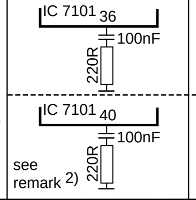
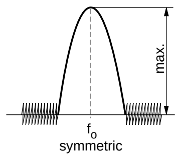
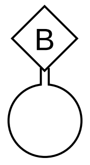
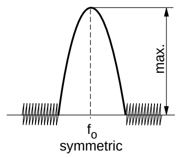
2101	B4	2119	D3	2130	D5	2137	A4	2146	B7	2153	C5	2165	C4	3103	C4	3134	D3	3152	A4	3158	A4	3169	B6	4106	C4	6107	C7	7103	D7
2102	B1	2120	D3	2131	C5	2139	C6	2147	A5	2154	C4	2166	B6	3104	B4	3141	C5	3153	A4	3159	A5	3170	A6	4107	C5	6120	A6	7111	A5
2103	D4	2124	D3	2132	D6	2140	C6	2148	B6	2159	C5	2167	B6	3105	C4	3143	D6	3154	C7	3160	A5	3172	C7	4108	C5	6130	D4	7119	B5
2104	B4	2125	D3	2134	D7	2141	C6	2149	D6	2161	A6	2169	A4	3113	B5	3144	B7	3155	C7	3161	A5	3176	D6	6103	B3	6131	C4		
2105	C1	2126	D6	2135	D7	2143	C7	2150	B5	2163	B6	3101	D5	3119	B5	3145	C5	3156	A6	3167	B7	3181	D4	6105	C3	7101	C5		
2112	B5	2127	C5	2136	A4	2145	A5	2152	C5	2164	C6	3102	C3	3132	D5	3146	C7	3157	A6	3168	C7	4103	B5	6106	C3	7102	D4		

TUNER BOARD ECO6 *Systems - non Cenelec* / copperside view


2
3
4
5
6
7
A
B
C
D
4
3
A
C
1
2
D
5
Vdd
Vcc2
Vcc1
7101
3422.3
00-08-03
K
A
C
B E
SMD jumper
41..
(not all items shown in schematic diagram)
ECO6 Systems non CENELEC stage .3, 120900

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (**ECO6** FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D	 IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX ↕
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C $\Delta f=\pm10kHz$ V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R IC 7101 40 100nF 220R see remark 2)	5111 5112	5	 max. f_o symmetric
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	 B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	 max. f_o symmetric ↕
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		↕
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* SYSTEMS NON-CENELEC

MISCELLANEOUS

1101	2422 015 19376	SOCKET 2P CLICKFIT	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR 2 POLE	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2101©	4822 126 13692	47pF	1%	63V	
2102©	4822 126 13838	100nF	10%	50V	not USA
2103©	5322 122 31647	1nF	10%	63V	
2104©	5322 122 32531	100pF	5%	50V	
2105©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00191	3-11pF TRIMCAP.,N450			
2107	4822 121 51319	1µF	20%	50V	
2120©	4822 126 13689	18pF	1%	63V	
2124©	5322 122 32654	22nF	10%	63V	
2125©	2020 552 96199	560pF	1%	50V	
2126©	5322 122 31863	330pF	5%	50V	
2127©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130©	5322 122 32654	22nF	10%	63V	
2131©	4822 126 13482	470nF	20%	16V	
2132©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134©	4822 126 13188	15nF	5%	63V	not USA
2134©	5322 122 32654	22nF	10%	63V	USA only
2135©	4822 126 13188	15nF	5%	63V	not USA
2135©	5322 122 32654	22nF	10%	63V	USA only
2136©	4822 126 14076	220nF	20%	25V	
2137©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139©	4822 126 14236	15pF	5%	50V	
2140©	4822 126 13695	82pF	1%	63V	
2141©	4822 126 13838	100nF	10%	50V	
2143©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145©	4822 122 33575	220pF	5%	50V	
2146©	4822 122 33575	220pF	5%	50V	
2147©	4822 122 33575	220pF	5%	50V	
2148©	4822 122 33127	2,2nF	10%	63V	
2149©	5322 122 32659	33pF	5%	50V	RDS only
2150©	4822 126 13838	100nF	10%	50V	
2152©	4822 126 12105	33nF	5%	63V	not for East Europe
2152©	5322 116 80853	560pF	5%	63V	for East Europe only
2153©	4822 126 13486	15pF	2%	63V	not for East Europe
2153©	4822 122 33926	12pF	2%	50V	for East Europe only
2155	2020 800 00191	3-11pF TRIMCAP.,N450			
2159©	5322 122 32659	33pF	5%	50V	
2164©	4822 126 13482	470nF	20%	16V	
2165©	4822 126 13838	100nF	10%	50V	
2166©	5322 122 31647	1nF	10%	63V	
2167©	4822 122 33926	12pF	5%	50V	
2169©	4822 122 33127	2,2nF	10%	63V	RDS only

RESISTORS

3101©	4822 051 20333	33kΩ	5%	0,1W	
3102©	4822 117 10837	100kΩ	1%	0,1W	
3103©	4822 051 20822	8,2kΩ	5%	0,1W	
3104©	4822 117 13577	330Ω	1%	0,1W	
3105©	4822 117 11503	220Ω	5%	0,1W	
3132©	4822 051 20479	47Ω	5%	0,1W	
3134©	4822 051 20223	22kΩ	5%	0,1W	
3141©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145©	4822 117 11449	2,2kΩ	1%	0,1W	
3146©	4822 051 20229	22Ω	5%	0,1W	
3152©	4822 051 20471	470Ω	5%	0,1W	
3153©	4822 051 20471	470Ω	5%	0,1W	
3154©	4822 117 13577	330Ω	1%	0,1W	
3155©	4822 117 11503	220Ω	5%	0,1W	
3156©	4822 117 10837	100kΩ	1%	0,1W	
3157©	4822 117 10837	100kΩ	1%	0,1W	
3158©	4822 051 20471	470Ω	5%	0,1W	
3159©	4822 051 20471	470Ω	5%	0,1W	
3160©	4822 051 20471	470Ω	5%	0,1W	
3161©	4822 051 20223	22kΩ	5%	0,1W	
3167©	4822 051 20121	120Ω	5%	0,1W	
3168©	4822 051 20121	120Ω	5%	0,1W	
3169©	4822 051 20154	150kΩ	5%	0,1W	
3170©	4822 117 10837	100kΩ	1%	0,1W	
3172©	4822 051 20562	5,6kΩ	5%	0,1W	
3176©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3181©	4822 051 10102	1kΩ	2%	0,25W	
4103©	4822 051 20008	CHIP JUMPER 0805			
4106©	4822 051 20008	CHIP JUMPER 0805			
4107©	4822 051 20008	CHIP JUMPER 0805			
4108©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	2422 549 44023	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	2422 549 44108	RF-COIL, AM-OSCILLATOR
5130	4822 157 11843	RF COIL 1,5 TURNS
5131	4822 157 11843	RF COIL 1,5 TURNS

DIODES

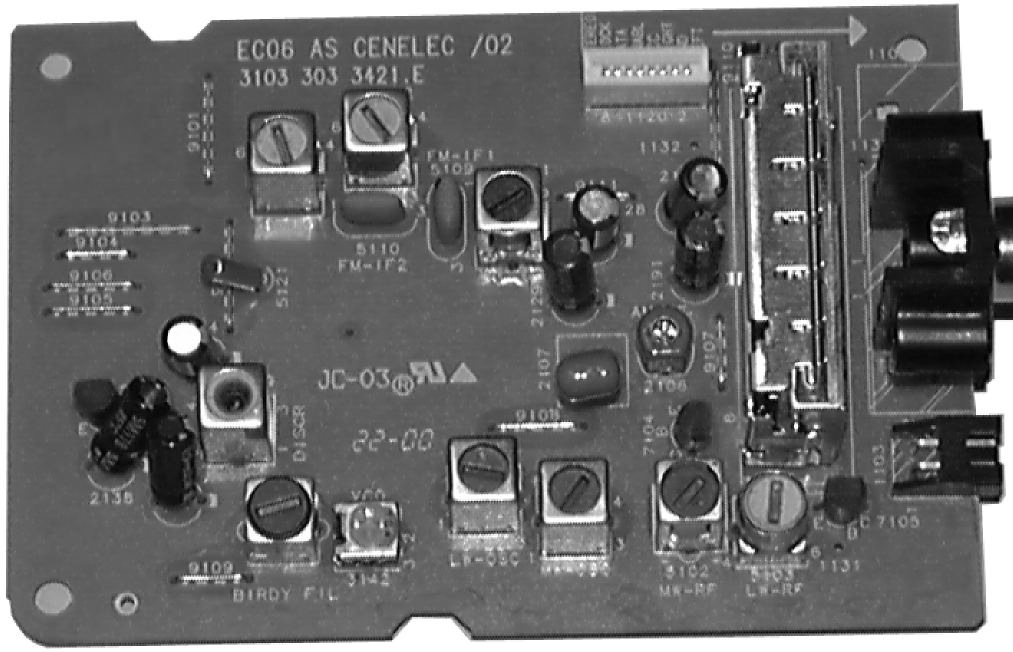
6103©	5322 130 34337	BAV99
6105©	4822 130 83075	HN1V02H
6106©	4822 130 83757	BAS216
6107©	9340 386 90115	BZX284-C11
6120©	4822 130 83757	BAS216
6130©	4822 130 82833	1SV228
6131©	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 42131	BF550	
7103©	5322 130 42756	BC857C	RDS only
7111©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	

INTEGRATED CIRCUITS

7101©	9351 740 80557	TEA5757H/V1, RADIO IC


ECO6 AS CENELEC /02
3103 303 3421.E
FM-IF1
5109
5110
FM-IF2
JC-03
DISCR
BIRDY FIL
LW-OSC
MW-RF
LW-RF
9101
9103
9104
9105
9106
9109
2135
7105
1131
1132

ECO6 Tuner Board

version: ***SYSTEMS CENELEC***

TABLE OF CONTENTS

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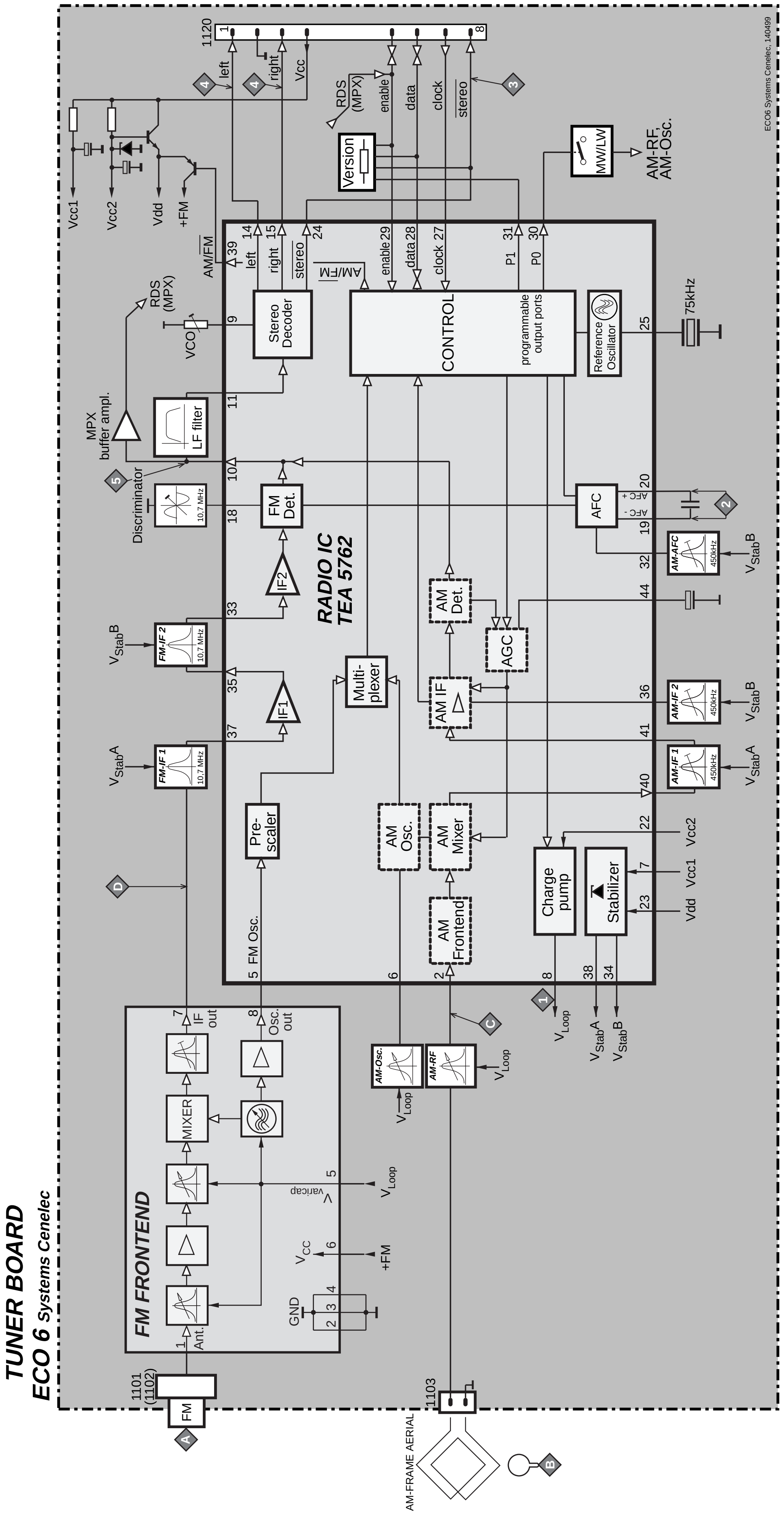
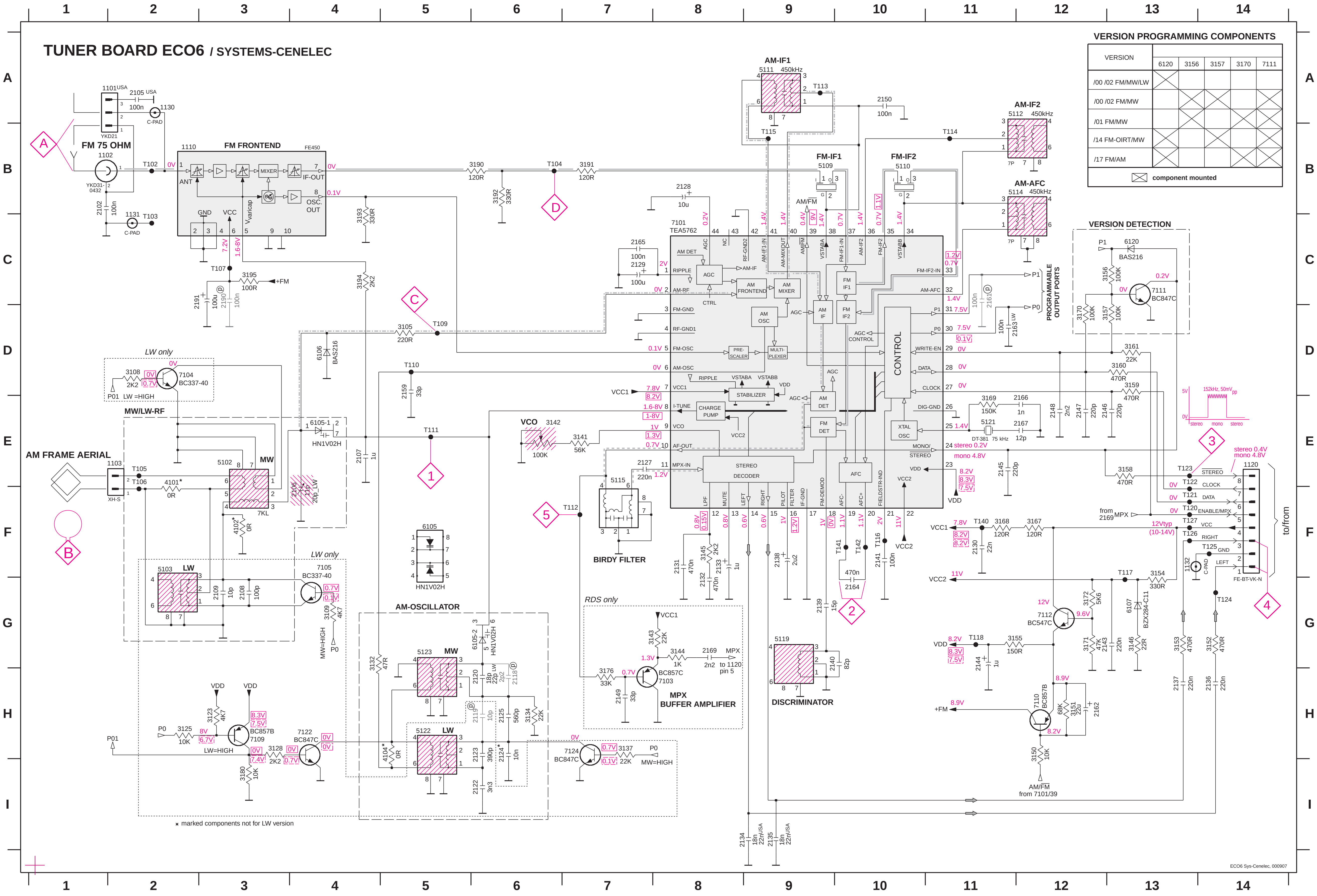
Schematic Diagram...7B-2
Component Layout..7B-3
Adjustment table 7B-3
Electrical Partslist..7B-4

BLOCK DIAGRAM


TUNER BOARD
ECO 6 Systems Cenelec
ECO6 Systems Cenelec 140499
1120
left
right
Vcc
RDS (MPX)
enable
data
clock
stereo
Version
MW/LW
AM-RF
AM-Osc.
Vcc1
Vcc2
Vdd
+FM
AM/FM
RDS (MPX)
VCO
Stereo Decoder
CONTROL
programmable output ports
Reference Oscillator
75kHz
P1
P0
MPX buffer ampl.
LF filter
Discriminator
10.7 MHz
FM Det.
AFC
AFC +
AFC -
AM-AFC
450kHz
RADIO IC TEA 5762
IF2
AM Det.
AGC
FM-IF 2
FM-IF 1
IF1
Multi-plexer
AM IF
AM-IF 2
AM-IF 1
Pre-scaler
AM Osc.
AM Mixer
AM Frontend
Charge pump
Stabilizer
FM Osc.
FM FRONTEND
IF out
Osc. out
MIXER
Ant.
varicap
GND
Vcc
+FM
AM-Osc.
AM-RF
1101 (1102)
FM
1103
AM-FRAME AERIAL

TUNER BOARD ECO6 / SYSTEMS-CENELEC


FM 75 OHM
FM FRONTEND
AM FRAME AERIAL
MW/LW-RF
LW only
MW
LW
AM-OSCILLATOR
VCO
BIRDY FILTER
RDS only
MPX BUFFER AMPLIFIER
DISCRIMINATOR
AM-IF1
AM-IF2
AM-AFC
FM-IF1
FM-IF2
7101 TEA5762
CONTROL
STEREO DECODER
PROGRAMMABLE OUTPUT PORTS
VERSION DETECTION
to/from
FE-BT-VK-N
× marked components not for LW version
ECO6 Sys-Cenelec, 000907

VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒

☒ component mounted

1101	A2
1102	B1
1103	E2
1110	B2
1120	E14
1130	A2
1131	C2
1132	F13
2102	B1
2105	A2
2106	E3
2107	E4
2108	G3
2109	G3
2118	H6
2119	H6
2120	H6
2122	I6
2123	H6
2124	H6
2125	H6
2127	E7
2128	B8
2129	C7
2130	F11
2131	F8
2132	F8
2133	F8
2134	I8
2135	I9
2136	H14
2137	H13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	E11
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2159	D5
2161	C11
2162	H12
2163	D11
2164	G10
2165	C7
2166	E11
2167	E11
2169	G8
2190	C3
2191	C3
3105	D5
3108	D2
3109	G4
3123	H3
3125	H2
3128	H3
3132	G4
3134	H6
3137	H7
3141	E7
3142	E6
3143	G7
3144	G8
3145	F8
3146	G13
3150	H12
3151	H12
3152	G14
3153	G13
3154	F13
3155	G12
3156	C12
3157	D12
3158	E13
3159	D13
3160	D13
3161	D13
3167	F12
3168	F11
3169	E11
3170	D12
3171	G12
3172	G12
3176	H7
3180	I3
3190	B6
3191	B7
3192	B6
3193	B4
3194	C4
3195	C3
4101	E2
4102	F3
4104	H5
5102	E3
5103	F2
5109	B9
5110	B10
5111	A9
5112	A11
5114	B11
5115	E7
5119	G9
5121	E11
5122	H5
5123	G5
6105-1	E4
6105-2	G6
6106	D4
6107	G13
6120	C13
7101	C8
7103	H8
7104	D2
7105	F4
7109	H3
7110	H12
7111	C13
7112	G12
7122	H4
7124	H7
T102	B2
T103	B2
T104	B6
T105	E2
T106	E2
T107	C3
T109	D5
T110	D5
T111	E5
T112	F7
T113	A9
T114	B11
T116	F10
T117	F13
T118	G11
T120	F13
T121	F13
T122	E13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T140	F11
T141	F10
T142	F10

LEGEND

* ... only assembled in FM/AM-version
ⓟ...for provision only
USA ... for USA version only
LW ... for LW version only

SMD jumper
41xx
0R

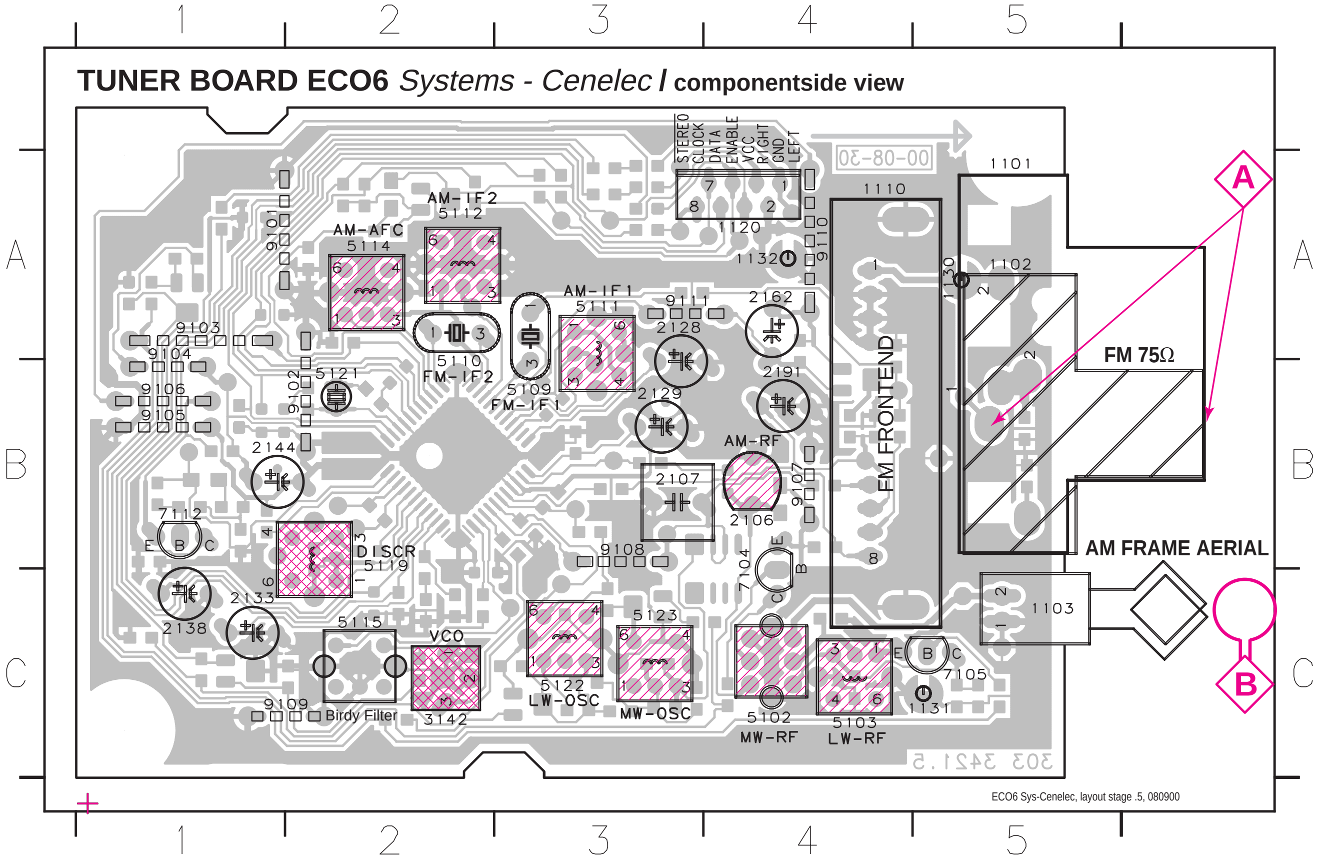
Ⓥ EVM

...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while set is tuned to a strong transmitter

Signal path
— FM
-·- AM
- - - MPX (Audio Frequency)
⇨ AF - left/right

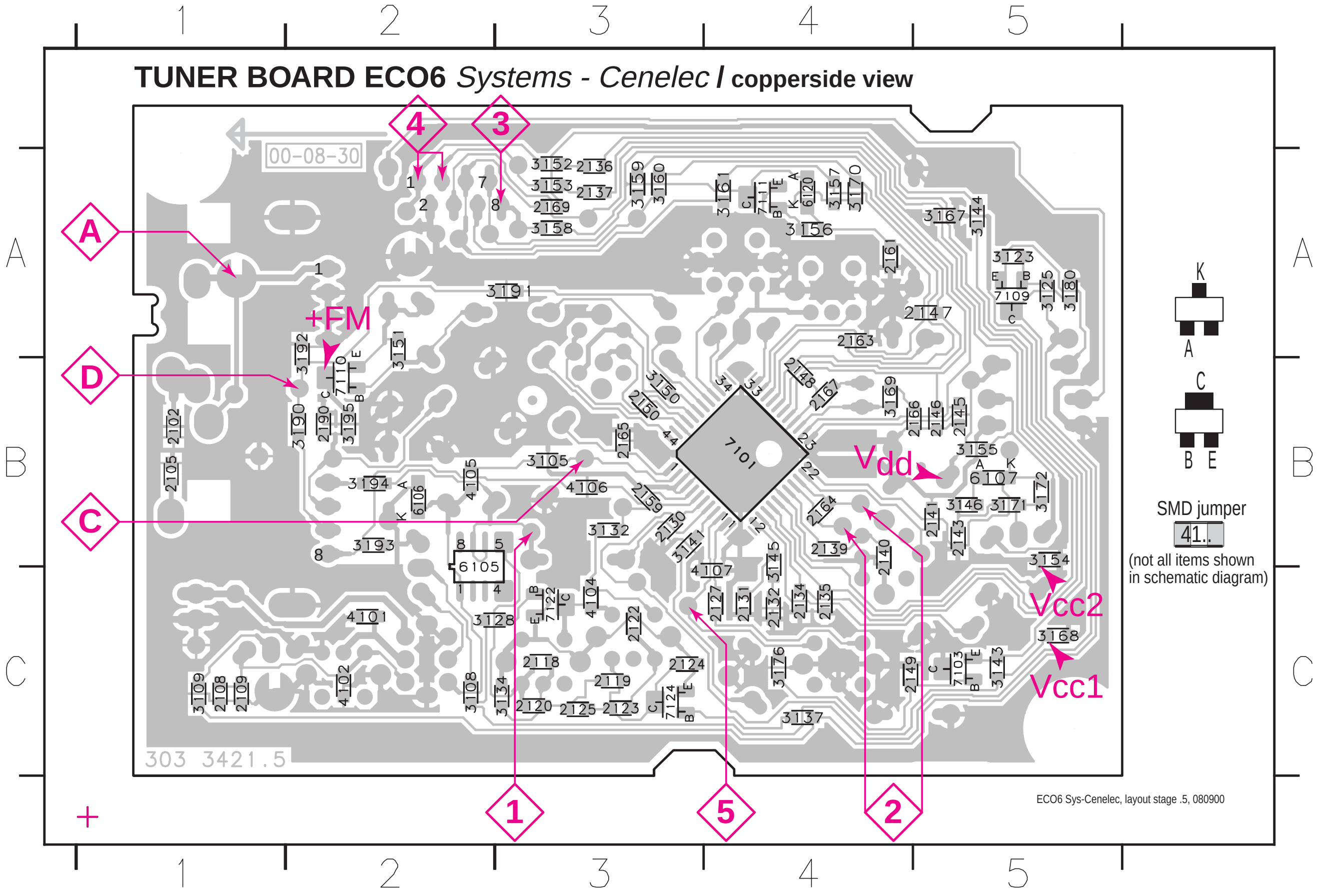
1101 B5	1110 B4	1131 C5	2107 B3	2133 C1	2162 A4	5102 C4	5110 A2	5114 A2	5121 B2	7104 C4	9101 A2	9104 B1	9107 B4	9110 A4
1102 B5	1120 A4	1132 A4	2128 A3	2138 B1	2191 B4	5103 C4	5111 A3	5115 C2	5122 C3	7105 C5	9102 B2	9105 B1	9108 B3	9111 A3
1103 C5	1130 A5	2106 B4	2129 B3	2144 B1	3142 C2	5109 B3	5112 A2	5119 B2	5123 C3	7112 B1	9103 A1	9106 B1	9109 C2	

TUNER BOARD ECO6 *Systems - Cenelec* / componentside view


1
2
3
4
5
A
B
C
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
00-08-30
1101
1110
1120
1132
9110
1102
1130
FM FRONTEND
FM 75Ω
AM FRAME AERIAL
1103
AM-IF2 5112
AM-AFC 5114
AM-IF1 5111
9101
9103
9104
9102
5121
9106
9105
5110 FM-IF2
5109 FM-IF1
9111
2162
2128
2191
2129
AM-RF
2107
2106
9107
9108
7104
2144
7112
E B C
DISCR 5119
2133
2138
5115
VCO
3142
9109
Birdy Filter
5123
5122 LW-OSC
MW-OSC
5102 MW-RF
5103 LW-RF
7105
1131
303 3421.5
ECO6 Sys-Cenelec, layout stage .5, 080900

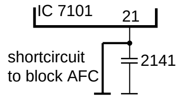
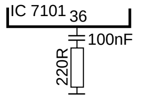
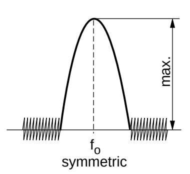
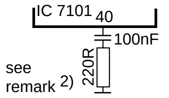
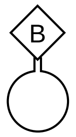
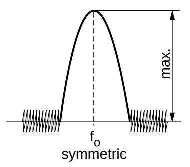
2102 B1	2120 C3	2130 B3	2137 A3	2146 B5	2161 A4	2169 A3	3125 A5	3143 C5	3152 A3	3158 A3	3169 B4	3190 B2	4101 C2	6105 B2	7109 A5
2105 B1	2122 C3	2131 C4	2139 B4	2147 A5	2163 A4	2190 B2	3128 C2	3144 A5	3153 A3	3159 A3	3170 A4	3191 A3	4102 C2	6106 B2	7110 B2
2108 C1	2123 C3	2132 C4	2140 B4	2148 B4	2164 B4	3105 B3	3132 B3	3145 C4	3154 B5	3160 A3	3171 B5	3192 A2	4104 C3	6107 B5	7111 A4
2109 C1	2124 C3	2134 C4	2141 B5	2149 C4	2165 B3	3108 C2	3134 C3	3146 B5	3155 B5	3161 A4	3172 B5	3193 B2	4105 B2	6120 A4	7122 C3
2118 C3	2125 C3	2135 C5	2143 B5	2150 B3	2166 B5	3109 C1	3137 C4	3150 B3	3156 A4	3167 A5	3176 C4	3194 B2	4106 B3	7101 B4	7124 C3
2119 C3	2127 C4	2136 A3	2145 B5	2159 B3	2167 B4	3123 A5	3141 B3	3151 A2	3157 A4	3168 C5	3180 A5	3195 B2	4107 C4	7103 C5	

TUNER BOARD ECO6 *Systems - Cenelec* / copperside view


1
2
3
4
5
A
B
C
00-08-30
4
3
A
D
C
+FM
Vdd
Vcc2
Vcc1
7101
6105
3152
2136
3153
2137
2169
3158
3156
3167
3191
3123
7109
2147
2163
3105
4106
3194
3193
3132
4107
4101
3128
2118
2119
2120
2125
2123
3137
3154
3168
3155
6107
3146
3171
2139
2149
3109
2108
2109
4102
3108
3134
303 3421.5
1
5
2
K
A
C
B E
SMD jumper
41..
(not all items shown in schematic diagram)
ECO6 Sys-Cenelec, layout stage .5, 080900

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (**ECO6 Cenelec** FM/MW - and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	D	 IC 7101 21 shortcircuit to block AFC 2141	5119	2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz 1)
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R	5111	5	 max. f_o symmetric
			 IC 7101 40 100nF 220R see remark 2)	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0mV ±2mV
AM RF 3)						
MW	1494kHz	B  Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		

ECO6 Sys Cenelec, 190599

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!
MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* *SYSTEMS-CENELEC*

MISCELLANEOUS

1101	2422 015 19376	SOCKET CLICKFIT 2P	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR, 2 POLE	
1110	2422 542 90071	FM FRONTEND	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2102 ©	4822 126 13838	100nF	10%	50V	not USA
2105 ©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750			LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450			FM/AM only
2107	4822 121 51319	1µF	20%	50V	
2108 ©	5322 122 32531	100pF	5%	50V	LW only
2109 ©	5322 122 32448	10pF	5%	50V	LW only
2120 ©	4822 126 13689	18pF	1%	63V	FM/AM only
2120 ©	5322 122 32658	22pF	5%	50V	LW only
2122 ©	4822 122 33891	3,3nF	10%	63V	LW only
2123 ©	2020 552 93494	390pF	1%	50V	LW only
2124 ©	4822 122 33177	10nF	20%	50V	FM/AM only
2125 ©	2020 552 96199	560pF	1%	50V	
2127 ©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130 ©	5322 122 32654	22nF	10%	63V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134 ©	4822 122 33893	18nF	5%	63V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	4822 122 33893	18nF	5%	63V	not USA
2135 ©	5322 122 32654	22nF	10%	63V	USA only
2136 ©	4822 126 14076	220nF	20%	25V	
2137 ©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2140 ©	4822 126 13695	82pF	1%	63V	
2141 ©	4822 126 13838	100nF	10%	50V	
2143 ©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145 ©	4822 122 33575	220pF	5%	50V	
2146 ©	4822 122 33575	220pF	5%	50V	
2147 ©	4822 122 33575	220pF	5%	50V	
2148 ©	4822 122 33127	2,2nF	10%	63V	
2149 ©	5322 122 32659	33pF	5%	50V	RDS only
2150 ©	4822 126 13838	100nF	10%	50V	
2159 ©	5322 122 32659	33pF	5%	50V	
2162	4822 124 81151	22µF	20%	50V	
2163 ©	4822 126 13838	100nF	10%	50V	LW only
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only
2190 ©	4822 126 13838	100nF	10%	50V	
2191	4822 124 40178	100µF	20%	10V	

RESISTORS

3105 ©	4822 117 11503	220Ω	5%	0,1W	
3108 ©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3109 ©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3123 ©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3125 ©	4822 117 10833	10kΩ	1%	0,1W	LW only
3128 ©	4822 117 11449	2,2kΩ	1%	0,1W	LW only

RESISTORS

3132©	4822 051 20479	47Ω	5%	0,1W	
3134 ©	4822 051 20223	22kΩ	5%	0,1W	
3137 ©	4822 051 20223	22kΩ	5%	0,1W	LW only
3141 ©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143 ©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144 ©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3150 ©	4822 117 10833	10kΩ	1%	0,1W	
3151 ©	4822 051 20683	68kΩ	5%	0,1W	
3152 ©	4822 051 20471	470Ω	5%	0,1W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154 ©	4822 117 13577	330Ω	1%	0,1W	
3155 ©	4822 117 10353	150Ω	5%	0,1W	
3156 ©	4822 117 10837	100kΩ	1%	0,1W	
3157 ©	4822 117 10837	100kΩ	1%	0,1W	
3158 ©	4822 051 20471	470Ω	5%	0,1W	
3159 ©	4822 051 20471	470Ω	5%	0,1W	
3160 ©	4822 051 20471	470Ω	5%	0,1W	
3161 ©	4822 051 20223	22kΩ	5%	0,1W	
3167 ©	4822 051 20121	120Ω	5%	0,1W	
3168 ©	4822 051 20121	120Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170 ©	4822 117 10837	100kΩ	1%	0,1W	
3171 ©	4822 117 10834	47kΩ	1%	0,1W	
3172 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3176 ©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3180 ©	4822 117 10833	10kΩ	1%	0,1W	LW only
3190 ©	4822 051 20121	120Ω	5%	0,1W	
3191 ©	4822 051 20121	120Ω	5%	0,1W	
3192 ©	4822 117 13577	330Ω	1%	0,1W	
3193 ©	4822 117 13577	330Ω	1%	0,1W	
3194 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3195 ©	4822 051 20101	100Ω	5%	0,1W	
4101 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4102 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4104 ©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4105 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4107 ©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	AM-IF FILTER 450kHz	
5112	4822 157 70302	AM-IF FILTER 450kHz	
5114	4822 157 70302	AM-IF FILTER 450kHz	
5115	4822 157 71636	ANTI BIRDY FILTER	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

6105 ©	4822 130 83075	HN1V02H
6106 ©	4822 130 83757	BAS216
6107 ©	9340 386 90115	BZX284-C11
6120 ©	4822 130 83757	BAS216

TRANSISTORS

7103 ©	5322 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109 ©	4822 130 60373	BC856B	LW only
7110 ©	4822 130 60373	BC856B	
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122 ©	5322 130 42755	BC847C	LW only
7124 ©	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC

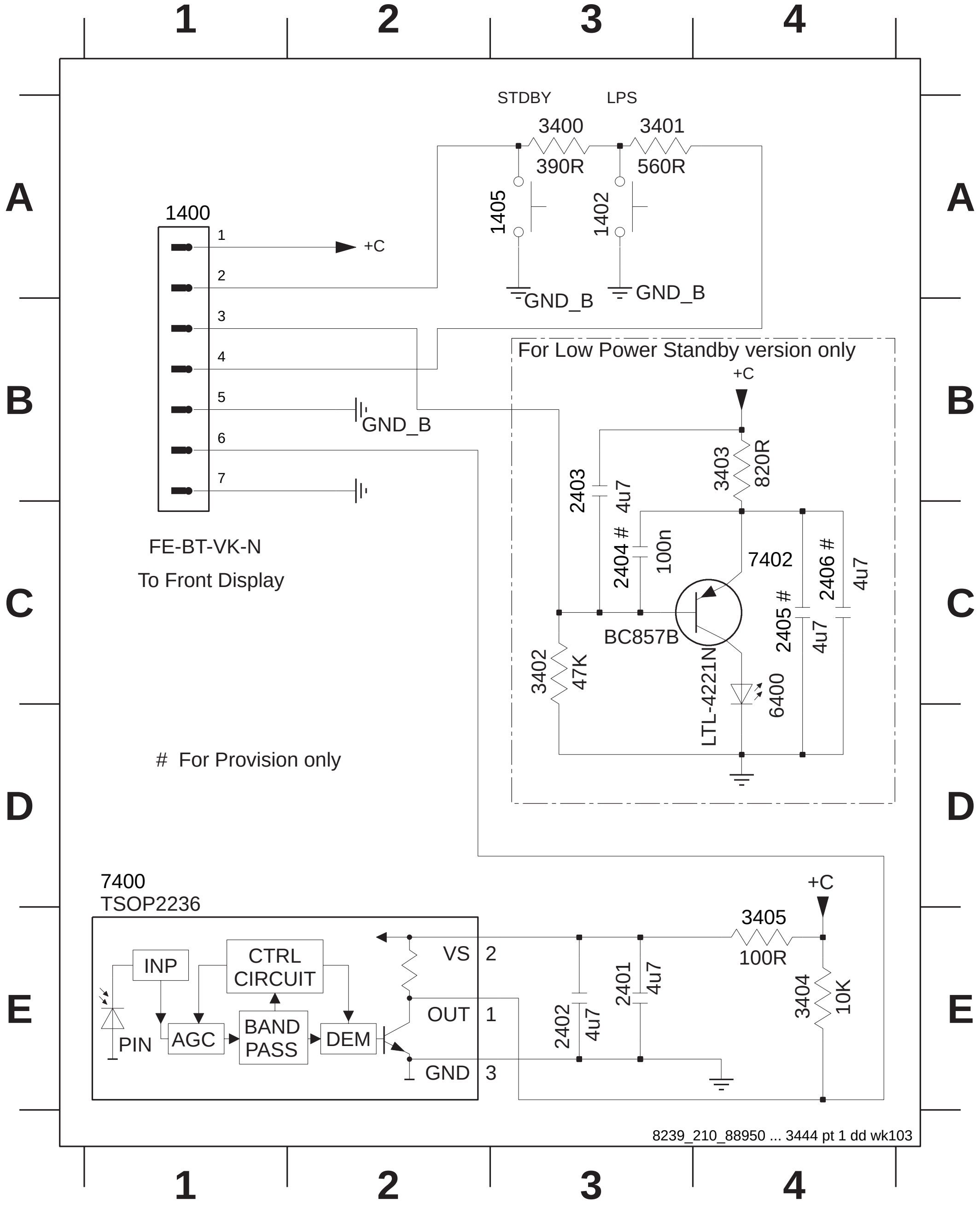
FRONT CONTROL BOARD

TABLE OF CONTENTS

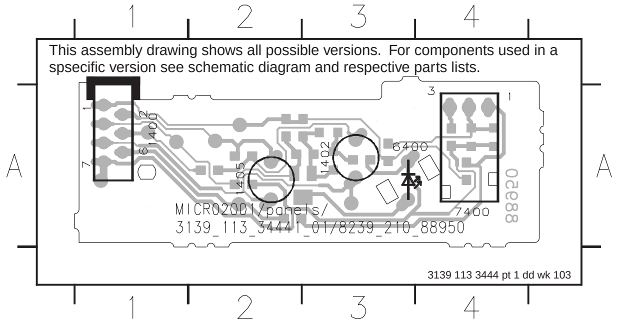
Standby (Power) part 8-1
Key Control (KEYB. 1) & Lightwash parts 8-2
Headphone, Jog (Volume) and CDC Key parts 8-3
Electrical parts list 8-4

STANDBY (POWER) PART - CIRCUIT & LAYOUTS

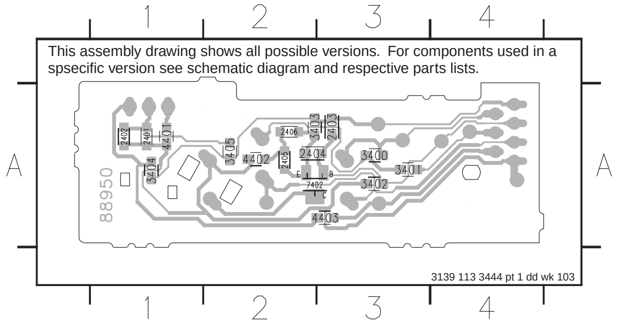
1400 A1	2401 E3	2404 C3	3400 A3	3403 B4	6400 C4
1402 A3	2402 E3	2405 C4	3401 A3	3404 E4	7400 D1
1405 A2	2403 B3	2406 C4	3402 C3	3405 E4	7402 C4


1
2
3
4
A
B
C
D
E
STDBY
LPS
3400
390R
3401
560R
1405
1402
GND_B
GND_B
1400
+C
1
2
3
4
5
6
7
GND_B
FE-BT-VK-N
To Front Display
For Low Power Standby version only
+C
3403
820R
2403
4u7
2404 #
100n
7402
2406 #
4u7
2405 #
4u7
BC857B
3402
47K
LTL-4221N
6400
# For Provision only
7400
TSOP2236
+C
3405
100R
INP
CTRL
CIRCUIT
VS
2
OUT
1
GND
3
AGC
BAND
PASS
DEM
PIN
2402
4u7
2401
4u7
3404
10K
8239_210_88950 ... 3444 pt 1 dd wk103

1400 A1	1402 A3	1405 A2	6400 A3	7400 A4

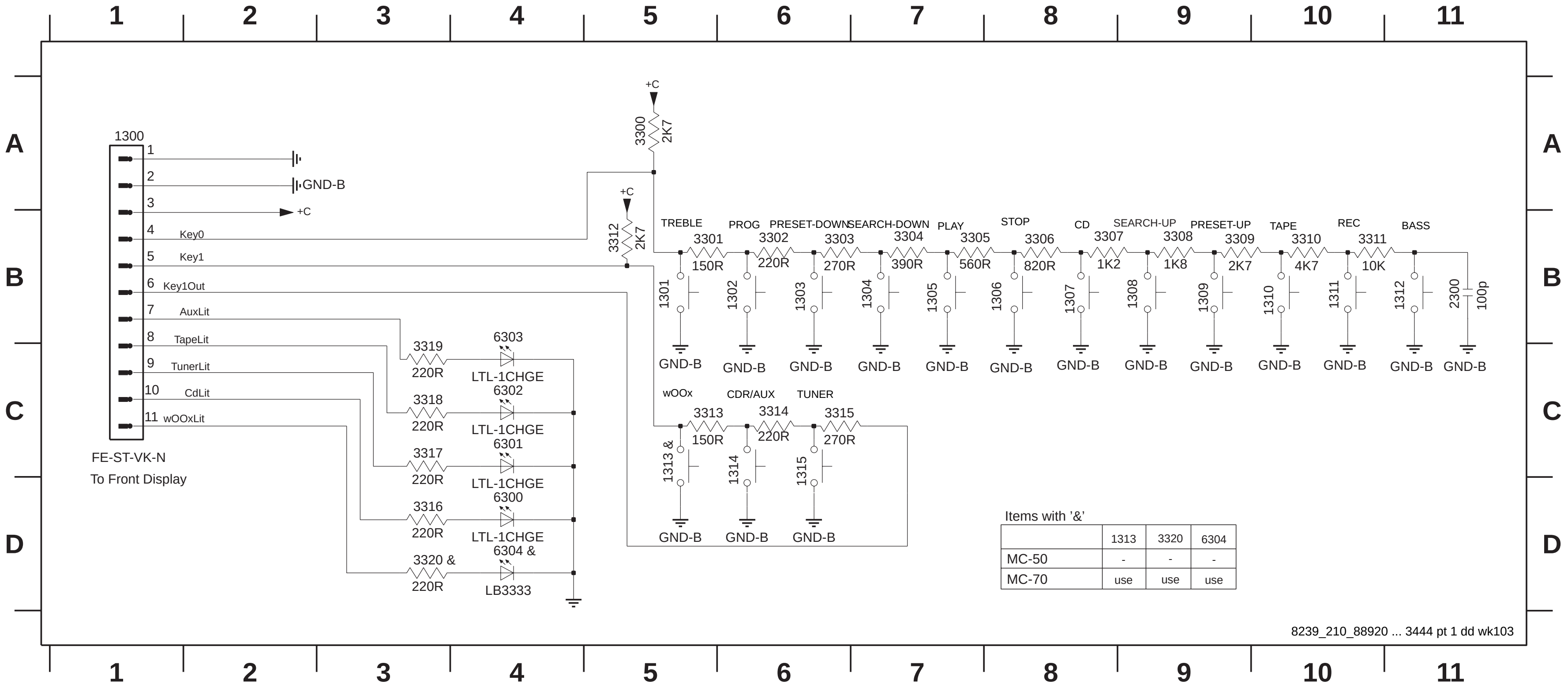

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.
1
2
3
4
A
A
1400
1402
1405
6400
7400
MICRO2001/panels/
3139_113_34441_01/8239_210_88950
88950
3139 113 3444 pt 1 dd wk 103

2401 A1	2405 A2	3402 A3	4401 A1
2402 A1	2406 A2	3403 A2	4402 A2
2403 A3	3400 A3	3404 A1	4403 A3
2404 A2	3401 A3	3405 A2	7402 A2


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.
1
2
3
4
A
A
88950
3139 113 3444 pt 1 dd wk 103

KEY CONTROL (KEYB. 1) PART - CIRCUIT & LAYOUT DIAGRAMS

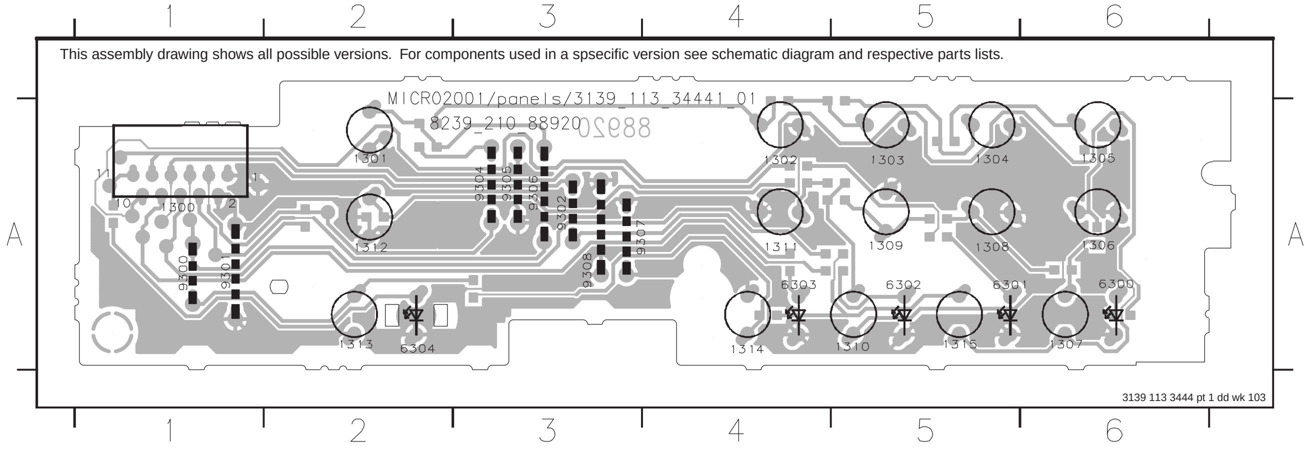
1300	A1
1301	B5
1302	B6
1303	B6
1304	B7
1305	B7
1306	B8
1307	B8
1308	B9
1309	B9
1310	B10
1311	B10
1312	B11
1313	C5
1314	D6
1315	D6
2300	B11
3300	A5
3301	B5
3302	B6
3303	B6
3304	B7
3305	B7
3306	B8
3307	B8
3308	B9
3309	B9
3310	B10
3311	B10
3312	B5
3313	C5
3314	C6
3315	C6
3316	D3
3317	C3
3318	C3
3319	C3
3320	D3
6300	D4
6301	C4
6302	C4
6303	B4
6304	D4


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
1300
GND-B
+C
Key0
Key1
Key1Out
AuxLit
TapeLit
TunerLit
CdLit
wOOxLit
FE-ST-VK-N
To Front Display
3300
2K7
3312
2K7
TREBLE
PROG
PRESET-DOWN
SEARCH-DOWN
PLAY
STOP
CD
SEARCH-UP
PRESET-UP
TAPE
REC
BASS
3301 150R
3302 220R
3303 270R
3304 390R
3305 560R
3306 820R
3307 1K2
3308 1K8
3309 2K7
3310 4K7
3311 10K
1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
1312
2300 100p
wOOx
CDR/AUX
TUNER
3313 150R
3314 220R
3315 270R
1313 &
1314
1315
3319 220R
3318 220R
3317 220R
3316 220R
3320 & 220R
6303 LTL-1CHGE
6302 LTL-1CHGE
6301 LTL-1CHGE
6300 LTL-1CHGE
6304 & LB3333
8239_210_88920 ... 3444 pt 1 dd wk103

Items with '&'

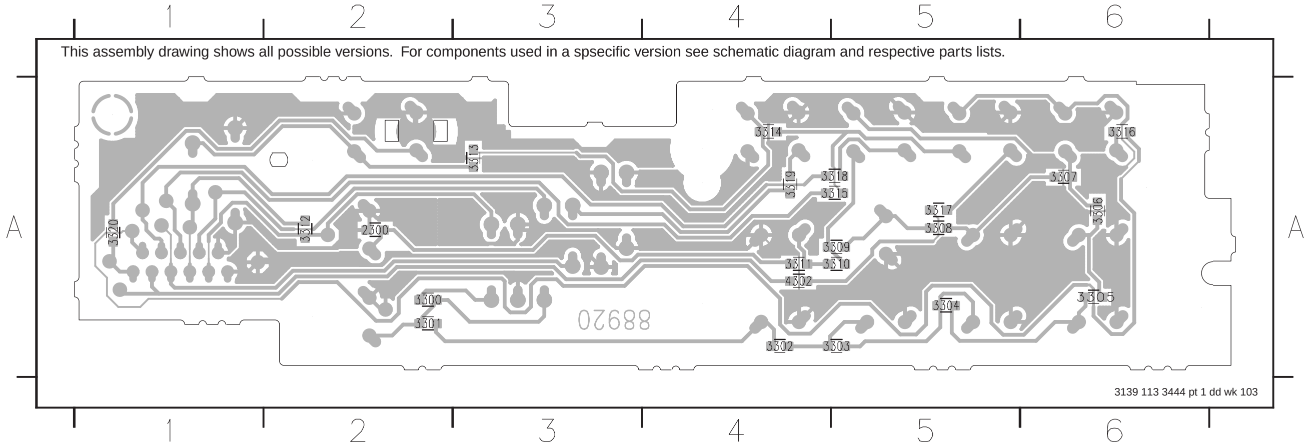
	1313	3320	6304
MC-50	-	-	-
MC-70	use	use	use

1300	A1
1301	A2
1302	A4
1303	A5
1304	A5
1305	A6
1306	A6
1307	A6
1308	A5
1309	A5
1310	A5
1311	A4
1312	A2
1313	A2
1314	A4
1315	A5
6300	A6
6301	A5
6302	A5
6303	A4
6304	A2
9300	A1
9301	A1
9302	A3
9304	A3
9305	A3
9306	A3
9307	A3
9308	A3


1
2
3
4
5
6
A
MICRO2001/panels/3139_113_34441_01
8239_210_88920
1300
1301
1302
1303
1304
1305
1306
1307
1308
1309
1310
1311
1312
1313
1314
1315
6300
6301
6302
6303
6304
3139 113 3444 pt 1 dd wk 103

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

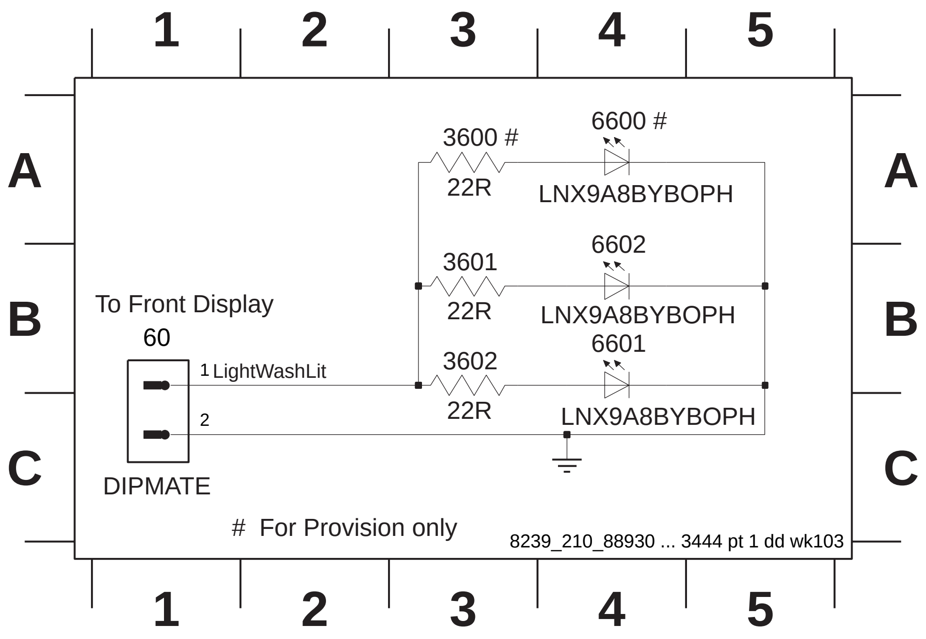
2300	A2
3300	A2
3301	A2
3302	A4
3303	A5
3304	A5
3305	A6
3306	A6
3307	A6
3308	A5
3309	A5
3310	A5
3311	A4
3312	A2
3313	A3
3314	A4
3315	A5
3316	A6
3317	A5
3318	A5
3319	A4
3320	A1
4302	A4


1
2
3
4
5
6
A
88920
3139 113 3444 pt 1 dd wk 103

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

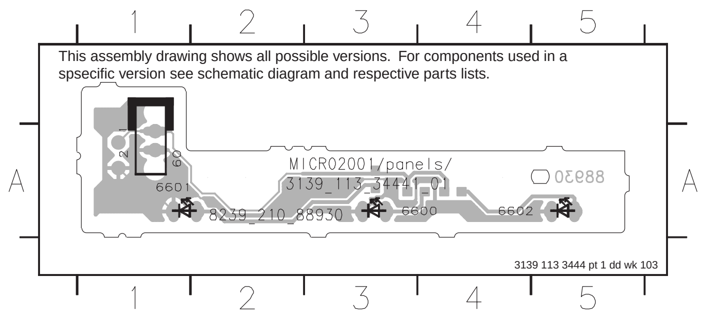
LIGHTWASH PART - CIRCUIT & LAYOUT DIAGRAMS

60	B1
3600	A3
3601	B3
3602	B3
6600	A4
6601	B4
6602	B4


1
2
3
4
5
A
B
C
To Front Display
60
LightWashLit
DIPMATE
3600 #
22R
3601
22R
3602
22R
6600 #
LNX9A8BYBOPH
6602
LNX9A8BYBOPH
6601
LNX9A8BYBOPH
8239_210_88930 ... 3444 pt 1 dd wk103

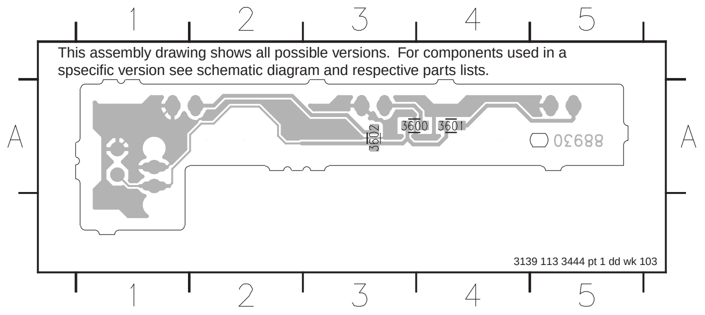
# For Provision only

60	A1
6600	A4
6601	A1
6602	A4


1
2
3
4
5
A
MICRO2001/panels/
3139_113_34441_01
8239_210_88930
88930
60
6600
6601
6602
3139 113 3444 pt 1 dd wk 103

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

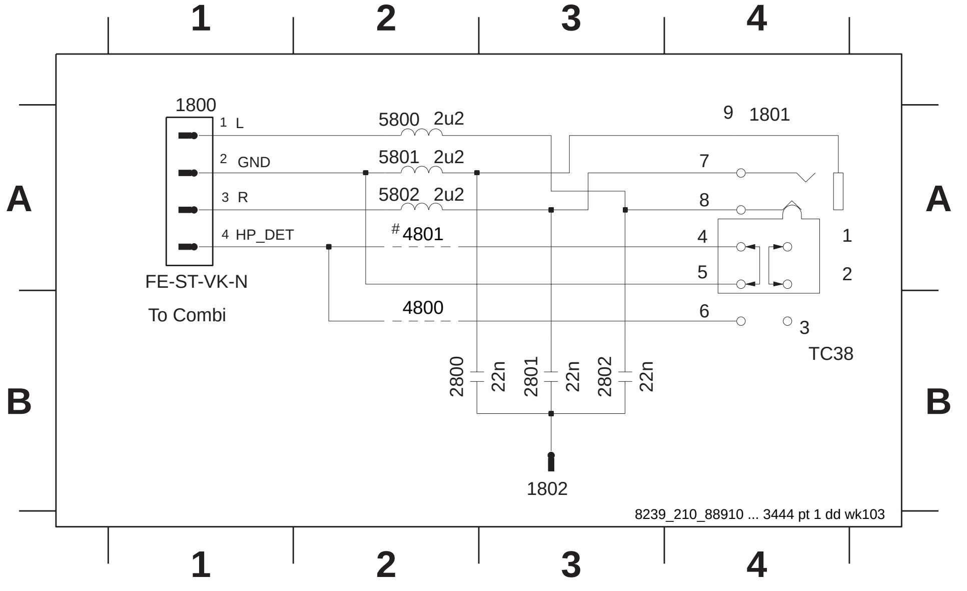
3600	A3
3601	A4
3602	A3


1
2
3
4
5
A
3600
3601
3602
88930
3139 113 3444 pt 1 dd wk 103

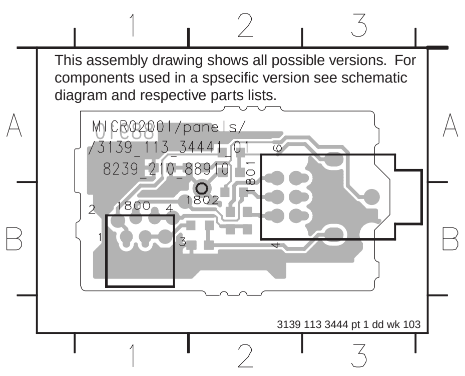
This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

HEADPHONE PART - CIRCUIT & LAYOUT DIAGRAMS

1800 A1	1802 B3	2801 B3	4800 B2	5800 A2	5802 A2
1801 A4	2800 B2	2802 B3	4801 A2	5801 A2	

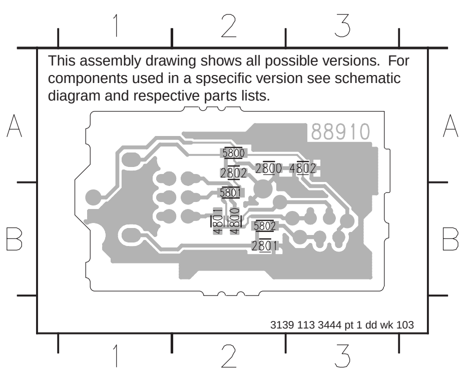

1
2
3
4
A
B
1800
1 L
2 GND
3 R
4 HP_DET
FE-ST-VK-N
To Combi
5800 2u2
5801 2u2
5802 2u2
#4801
4800
9 1801
7
8
4
5
6
1
2
3
TC38
2800 22n
2801 22n
2802 22n
1802
8239_210_88910 ... 3444 pt 1 dd wk103

1800 B1 1801 A2 1802 B2


1
2
3
A
B
MICRO2001/panels/
3139_113_34441_01
8239_210_88910
1800
1802
1801
3139 113 3444 pt 1 dd wk 103

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

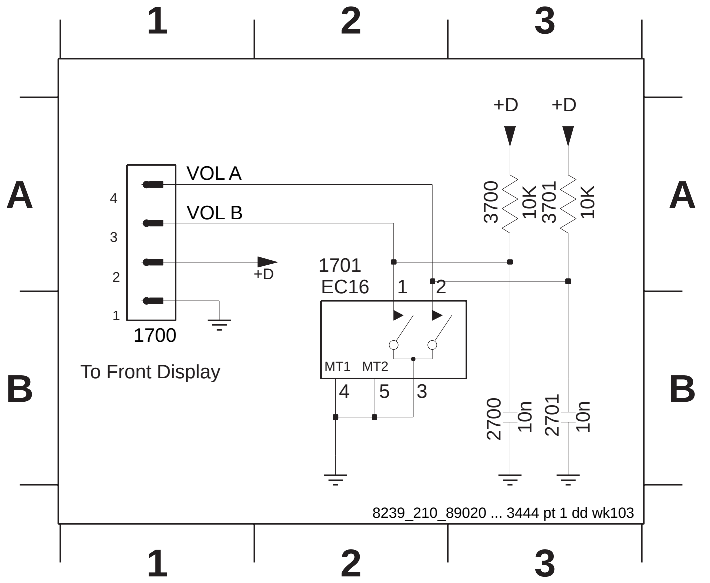
2800 A2 2802 A2 4801 B2 5800 A2 5802 B2
2801 B2 4800 B2 4802 A3 5801 B2


1
2
3
A
B
88910
5800
2800
4802
2802
5801
5802
4801
2801
3139 113 3444 pt 1 dd wk 103

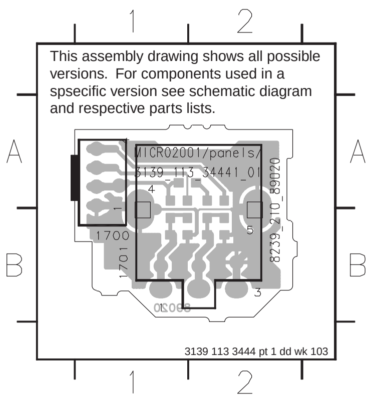
This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

JOG (VOLUME) PART - CIRCUIT & LAYOUT DIAGRAMS

1700 B1	1701 A2	2700 B3	2701 B3	3700 A3	3701 A3

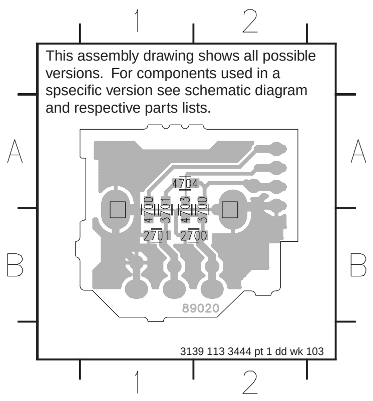

1
2
3
A
B
VOL A
VOL B
4
3
2
1
1700
To Front Display
+D
1701
EC16
1
2
MT1
MT2
4
5
3
+D
+D
3700 10K
3701 10K
2700 10n
2701 10n
8239_210_89020 ... 3444 pt 1 dd wk103

1700 B1 1701 B1


1
2
A
B
MICRO2001/panels/
3139_113_34441_01
8239_210_89020
1700
1701
3139 113 3444 pt 1 dd wk 103

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

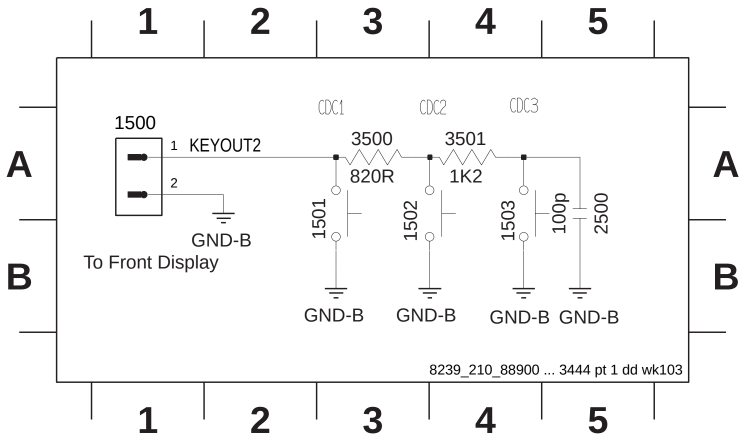
2700 B2 3700 B2 4700 B1 4704
2701 B1 3701 B1 4703 B1


1
2
A
B
4704
2701
2700
89020
3139 113 3444 pt 1 dd wk 103

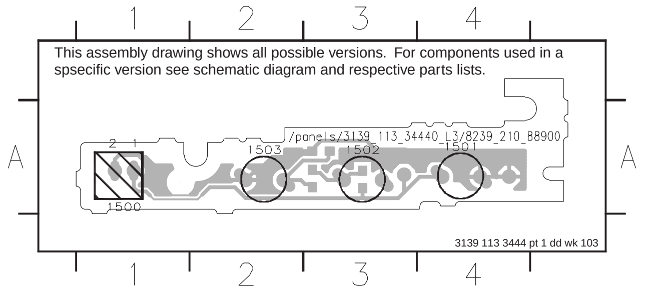
This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

CDC KEY PART - CIRCUIT & LAYOUT DIAGRAMS

1500 A1	1502 B3	2500 A5	3501 A4
1501 B2	1503 B4	3500 A3	

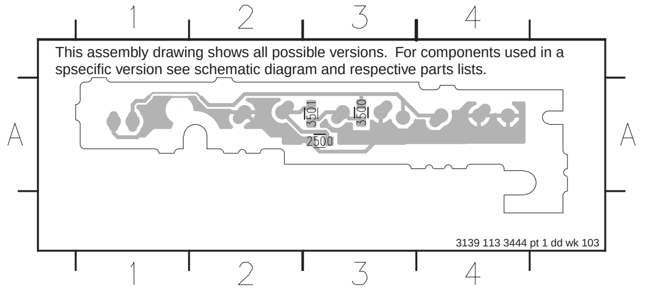

1
2
3
4
5
A
B
1500
1 KEYOUT2
2
GND-B
To Front Display
CDC1
CDC2
CDC3
3500
820R
3501
1K2
1501
1502
1503
100p
2500
GND-B
GND-B
GND-B
GND-B
8239_210_88900 ... 3444 pt 1 dd wk103

1500 A1 1501 A4 1502 A3 1503 A2


1
2
3
4
A
/panels/3139_113_34440_L3/8239_210_88900
1503
1502
1501
1500
3139 113 3444 pt 1 dd wk 103

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

2500 A3 3500 A3 3501 A3


1
2
3
4
A
3500
3501
2500
3139 113 3444 pt 1 dd wk 103

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

ELECTRICAL PARTS LIST - FRONT CONTROL BOARD

MISCELLANEOUS

1300	2422 025 14541	Flex Socket 11pin Hort.
1301	4822 276 13775	Tact Switch
1302	4822 276 13775	Tact Switch
1303	4822 276 13775	Tact Switch
1304	4822 276 13775	Tact Switch
1305	4822 276 13775	Tact Switch
1306	4822 276 13775	Tact Switch
1307	4822 276 13775	Tact Switch
1308	4822 276 13775	Tact Switch
1309	4822 276 13775	Tact Switch
1310	4822 276 13775	Tact Switch
1311	4822 276 13775	Tact Switch
1312	4822 276 13775	Tact Switch
1314	4822 276 13775	Tact Switch
1315	4822 276 13775	Tact Switch
1400	4822 267 10953	Flex Socket 7pin Vert.
1402	4822 276 13775	Tact Switch
1405	4822 276 13775	Tact Switch
1501	4822 276 13775	Tact Switch
1502	4822 276 13775	Tact Switch
1503	4822 276 13775	Tact Switch
1701	2422 129 16501	Rotary Encoder 12P
1800	4822 265 11183	Flex Socket 4pin Hort.
1801	4822 265 11529	Headphone Socket

CAPACITORS

2300	4822 122 31765	100pF 2% 63V
2401	2020 552 96305	4,7µF +80/-20% 10V
2402	2020 552 96305	4,7µF +80/-20% 10V
2403	2020 552 96305	4,7µF +80/-20% 10V
2500	4822 122 31765	100pF 2% 63V
2700	5322 126 11583	10nF 10% 50V
2701	5322 126 11583	10nF 10% 50V
2800	4822 126 14494	22nF 10% 25V
2801	4822 126 14494	22nF 10% 25V
2802	4822 126 14494	22nF 10% 25V

RESISTORS

3300	4822 051 30272	2k7 5% 0,062W
3301	4822 051 30151	150R 5% 0,062W
3302	4822 051 30221	220R 5% 0,062W
3303	4822 051 30271	270R 5% 0,062W
3304	4822 051 30391	390R 5% 0,062W
3305	4822 051 30561	560R 5% 0,062W
3306	4822 117 12968	820R 5% 0,62W
3307	4822 117 11817	1k2 1% 1/16W
3308	4822 117 12903	1k8 1% 0.063W
3309	4822 051 30272	2k7 5% 0,062W
3310	4822 051 30472	4k7 5% 0,062W
3311	4822 051 30103	10k 5% 0,062W
3312	4822 051 30272	2k7 5% 0,062W
3313	4822 051 30151	150R 5% 0,062W
3314	4822 051 30221	220R 5% 0,062W
3315	4822 051 30271	270R 5% 0,062W
3316	4822 051 30221	220R 5% 0,062W
3317	4822 051 30221	220R 5% 0,062W
3318	4822 051 30221	220R 5% 0,062W
3319	4822 051 30221	220R 5% 0,062W
3400	4822 051 30391	390R 5% 0,062W
3401	4822 051 30561	560R 5% 0,062W
3402	4822 117 12925	47k 1% 0.063W
3403	4822 117 12968	820R 5% 0,62W
3404	4822 051 30103	10k 5% 0,062W
3405	4822 051 30101	100R 5% 0,062W
3500	4822 117 12968	820R 5% 0,62W
3501	4822 117 11817	1k2 1% 1/16W
3601	4822 117 12139	22R 5% 0,062W
3602	4822 117 12139	22R 5% 0,062W
3700	4822 051 30103	10k 5% 0,062W
3701	4822 051 30103	10k 5% 0,062W
4302	4822 051 30008	0R Jumper 0603
4401	4822 051 30008	0R Jumper 0603
4402	4822 051 30008	0R Jumper 0603
4403	4822 051 30008	0R Jumper 0603
4700	4822 051 30008	0R Jumper 0603
4703	4822 051 30008	0R Jumper 0603
4704	4822 051 30008	0R Jumper 0603
4800	4822 051 30008	0R Jumper 0603
4802	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5800	4822 157 10586	Coil 2,2µH 10% 0805
5801	4822 157 10586	Coil 2,2µH 10% 0805
5802	4822 157 10586	Coil 2,2µH 10% 0805

DIODES

6300	4822 130 11589	LTL-1CHGE
6301	4822 130 11589	LTL-1CHGE
6302	4822 130 11589	LTL-1CHGE
6303	4822 130 11589	LTL-1CHGE
6400	9322 160 65676	LTL-4221NLC-VA
6601	9322 147 33676	LNX9A8BYB0PH
6602	9322 147 33676	LNX9A8BYB0PH

TRANSISTORS & INTEGRATED CIRCUITS

7400	9322 155 22667	IR Receiver TSOP2236ZC1
7402	4822 130 60373	BC857B

Note: Only the parts mentioned in this list are normal service spare parts.

ETF6-LE TAPE MODULE

(Non-Dolby / Single Deck)

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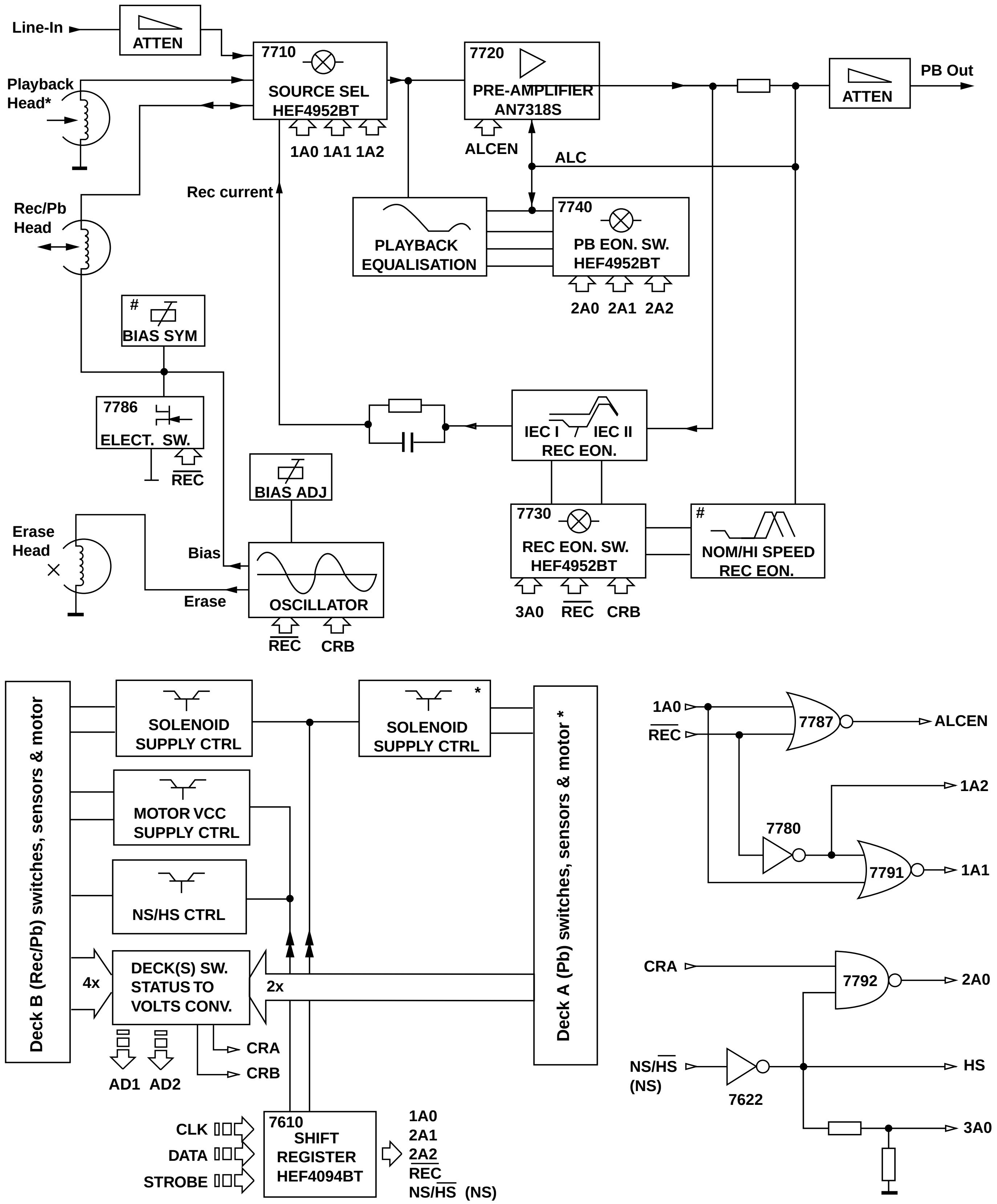
BLOCK DIAGRAM



Line-In
ATTEN
Playback Head*
7710
SOURCE SEL
HEF4952BT
1A0 1A1 1A2
7720
PRE-AMPLIFIER
AN7318S
ALCEN
ALC
ATTEN
PB Out
Rec/Pb Head
Rec current
PLAYBACK EQUALISATION
7740
PB EON. SW.
HEF4952BT
2A0 2A1 2A2
#
BIAS SYM
7786
ELECT. SW.
REC
BIAS ADJ
IEC I
IEC II
REC EON.
Erase Head
Bias
Erase
OSCILLATOR
REC
CRB
7730
REC EON. SW.
HEF4952BT
3A0
REC
CRB
#
NOM/HI SPEED
REC EON.
Deck B (Rec/Pb) switches, sensors & motor
SOLENOID SUPPLY CTRL
MOTOR VCC SUPPLY CTRL
NS/HS CTRL
4x
DECK(S) SW. STATUS TO VOLTS CONV.
2x
*
SOLENOID SUPPLY CTRL
Deck A (Pb) switches, sensors & motor *
AD1 AD2
CRA
CRB
CLK
DATA
STROBE
7610
SHIFT REGISTER
HEF4094BT
1A0
2A1
2A2
REC
NS/HS (NS)
1A0
REC
7787
ALCEN
1A2
7780
7791
1A1
CRA
7792
2A0
NS/HS
(NS)
7622
HS
3A0

▯▯⇨ MicroProcessor Control / Communication lines

⇨ Direct / Indirect Control lines from Shift Registers

NOTE:
# For Non-dolby version only
Only 1 channel is presented.
* Not for Single deck
& Provision only

Date: wk0050

Brief introduction

General

1. Playback Mode
   Signal from the playback head (Deck B) is selected and fed through by the Mode Selector IC7710 (HEF4952BT). The signal is amplified by amplifier IC7720 (AN7318S) before feeding to the IC7740 (HEF4952BT) and out to the AF Board via connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then amplified by the amplifier IC7720 (AN7318S). The amplified output signal will pass through IC7730 (HEF4952BT) for record equalization and back to IC7710 (HEF4952BT) before registered into the Rec/PB Head (Deck B).

3. Mode Selector
   The Mode Selector IC7710 (HEF4952BT) handles 2 inputs signal, Playback Signal from Deck B and Recording Signal.

4. Amplifier PB/REC
   Amplifier IC7720 (AN7318S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

5. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

6. Muting Circuit
   Switch S4 of the IC7740 (HEF4952BT) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

7. IC7740 (HEF4952BT)
   The function of the IC7740 (HEF4952BT) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

8. IC7730 (HEF4952BT)
   The function of the IC7730 (HEF4952BT) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

9. Bias Level
   Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

10. PB Switch
    FET 7786 (J111) acting like an electronic playback switch provides a virtual ground for the Rec/PB Head (Deck B). During the Playback mode, the FET is turn on shorting pin 2 of connector 1710 to the ground. During Recording mode, the FET is turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.
11. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952BT) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL_B and MOT. Recording speed is controlled via NS/HS.

ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non-Autoreverse
FR	Autoreverse Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701 INTERCONNECTION TO AF BOARD

○	1	REC-L	Record input left
○	2	REC-R	Record input right
○	3	GND A	AF Ground
○	4	TAPE-L	Playback output left
○	5	+12V	D.C. supply (+12V) for AF electronics
○	6	TAPE-R	Playback output right
○	7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703 INTERCONNECTION TO AF BOARD

○	1	GND M	Motor Ground
○	2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706 INTERCONNECTION TO FRONT BOARD

○	1	AD2	Deck sensing switches output voltage / Deck A EOT
○	2	AD1	Deck sensing switches output voltage / Deck B EOT
○	3	+5V	DC supply +5V for ADC network
○	4	GND P	Control & Oscillator Ground
○	5	CLK	HEF4094BT shift register Clock line
○	6	DATA	HEF4094BT shift register Data line
○	7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710 DECK B HEADS CONNECTON

○	1	B R/P HD L+	R/P Head left channel positive
○	2	GND A	R/P Head return ground
○	3	B R/P HD R+	R/P Head right channel positive
○	4	ERASE HEAD	Erase Head
○	5	GND A	Erase Head ground

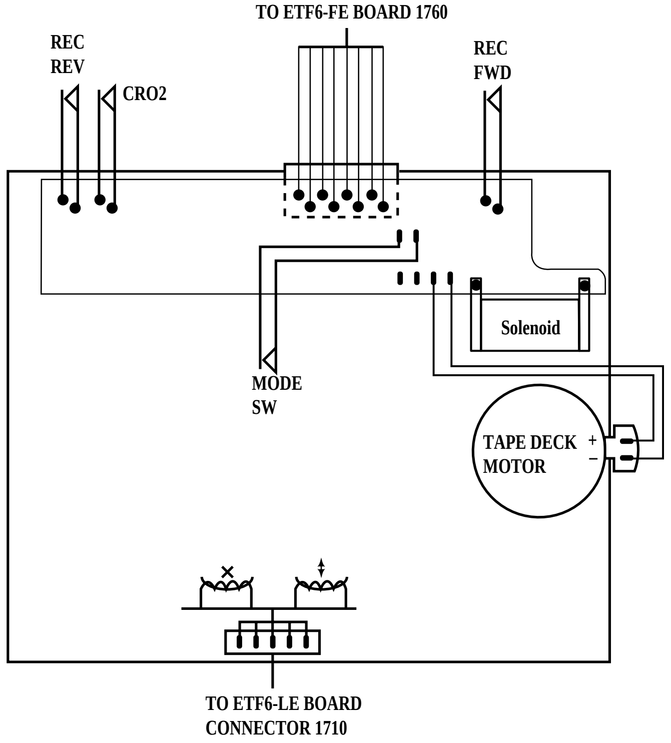
CONNECTOR 1730 DECK A HEAD CONNECTIONS ***(Not For Single deck)***

○	1	A PB HD L+	Pb Head left channel positive
○	2	GND A	Pb Head return ground shield
○	3	A PB HD R+	Pb Head right channel positive

CONNECTOR 1740 DECK A & B CONTROL INTERFACE

○	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○	3	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○	4	PHOTO B	Photo sensor output (tape movement indication)	
○	5	SOL B	Solenoid supply for deck B	
○	6	Vcc	Deck / Motor supply	
○	7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
○	8	GND M	Deck / Motor ground	

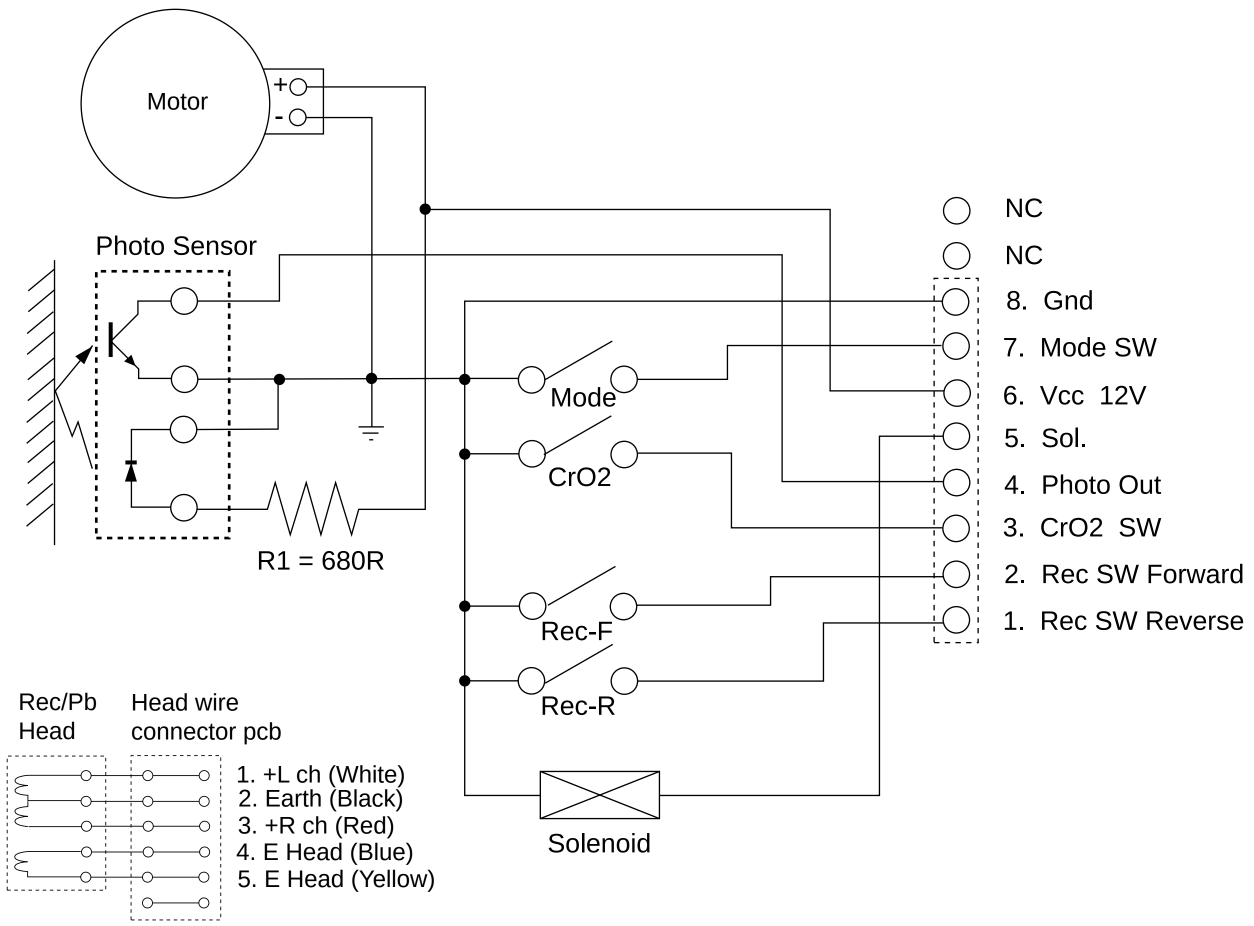
Tapedeck wiring (Single deck)


TO ETF6-FE BOARD 1760
REC
REV
CRO2
REC
FWD
Solenoid
MODE
SW
TAPE DECK
MOTOR
+
–
TO ETF6-LE BOARD
CONNECTOR 1710

Variation table for Analog Circuit

Item No.	Autoreverse (FR)	Non-Autoreverse (FF)
3723	12k	15k
3724	12k	15k
3743	1k2	1k
3744	1k2	1k
3769	12k	8k2
3772	4k7	5k6
3774	10k	8k2

TAPE MECHANISM ELECTRONICS


Motor
+
-
Photo Sensor
R1 = 680R
Mode
CrO2
Rec-F
Rec-R
Solenoid
NC
NC
8. Gnd
7. Mode SW
6. Vcc 12V
5. Sol.
4. Photo Out
3. CrO2 SW
2. Rec SW Forward
1. Rec SW Reverse
Rec/Pb
Head
Head wire
connector pcb
1. +L ch (White)
2. Earth (Black)
3. +R ch (Red)
4. E Head (Blue)
5. E Head (Yellow)

TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
MOTOR SPEED	SBC420 3150Hz	PLAY	1 or 2 LEFT RIGHT	frequency counter	check	3150Hz +/- 2%
WOW & FLUTTER	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
ADJUST AZIMUTH	SBC420 10kHz	PLAY FWD		mV-meter	left hand screw	max. output level & left=right
		PLAY REV ^			right hand screw	
PLAYBACK LEVEL & FREQ. RESPONSE	SBC420 315Hz	PLAY		mV-meter	check	125mV +/- 3dB (see fig.1 for freq. response)
ADJUST BIAS CURRENT	SBC419A	RECORD	5 or 6 LEFT RIGHT	mV-meter	3773	995mV
	SBC420				check	750mV +/- 1.5dB
CHECK RECORD/PLAYBACK FREQUENCY AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via 3 or 4	SBC419A or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	THD-meter	check	< 3% *

SBC419A : 4822 397 30069
SBC420 : 4822 397 30071

^ For Auto-reverse version only
* If high frequencies are not within limits, decrease bias and re-measure.
If distortion is too high, increase bias and re-meaure

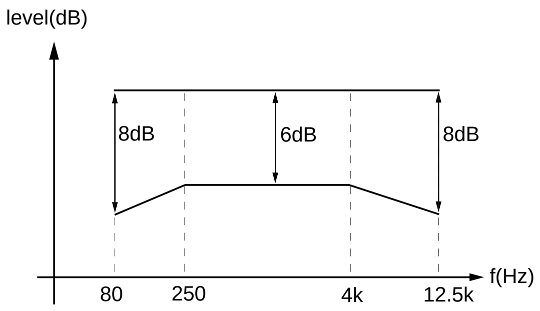


figure. 1

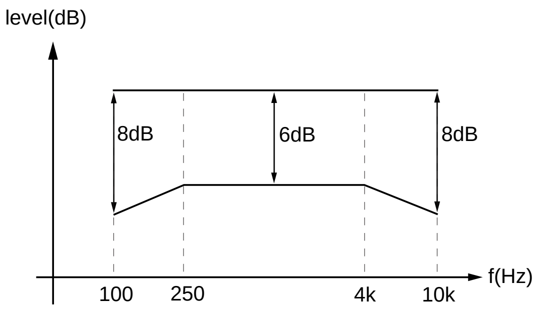
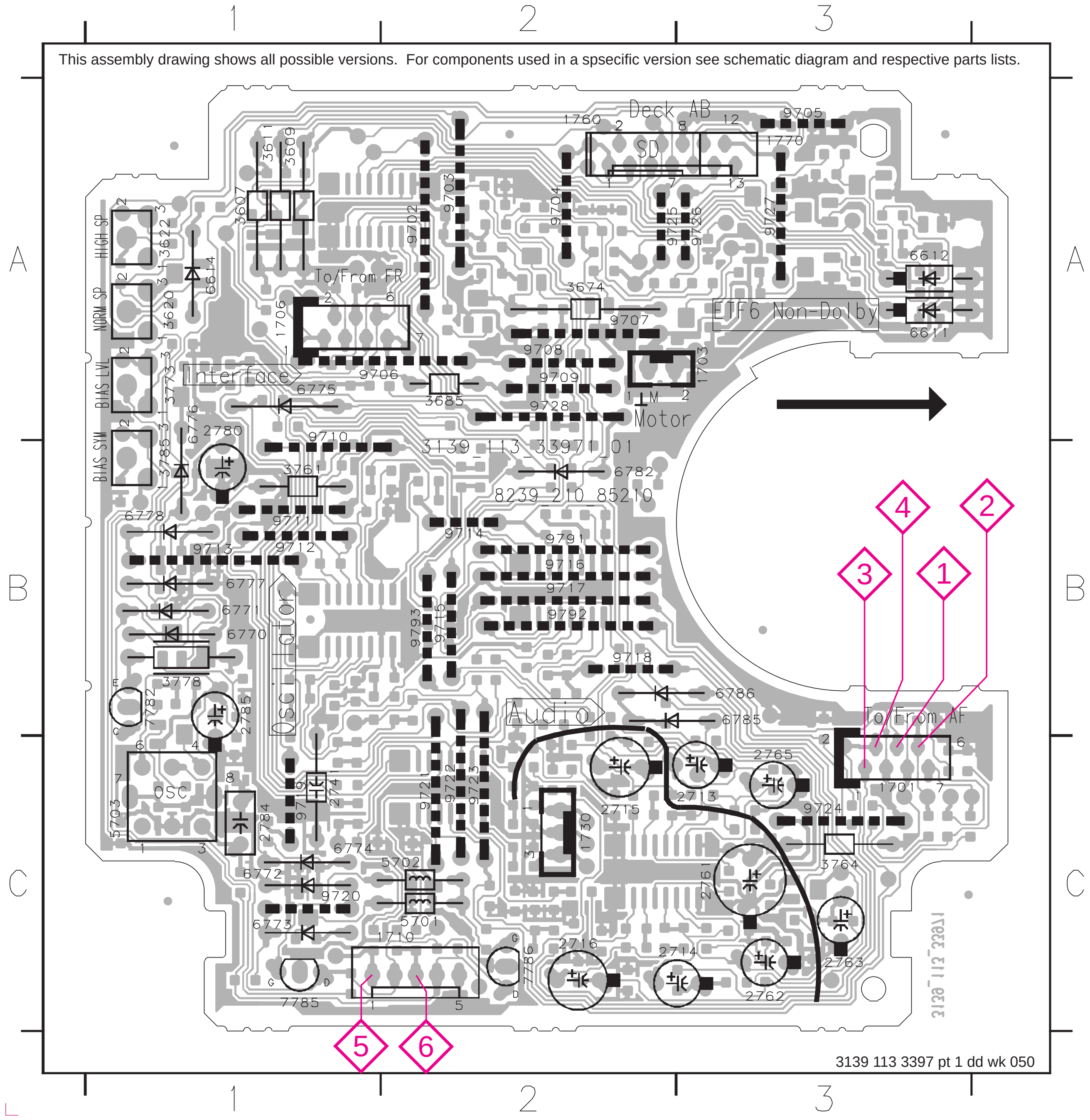


figure. 2

COMPONENT LAYOUT

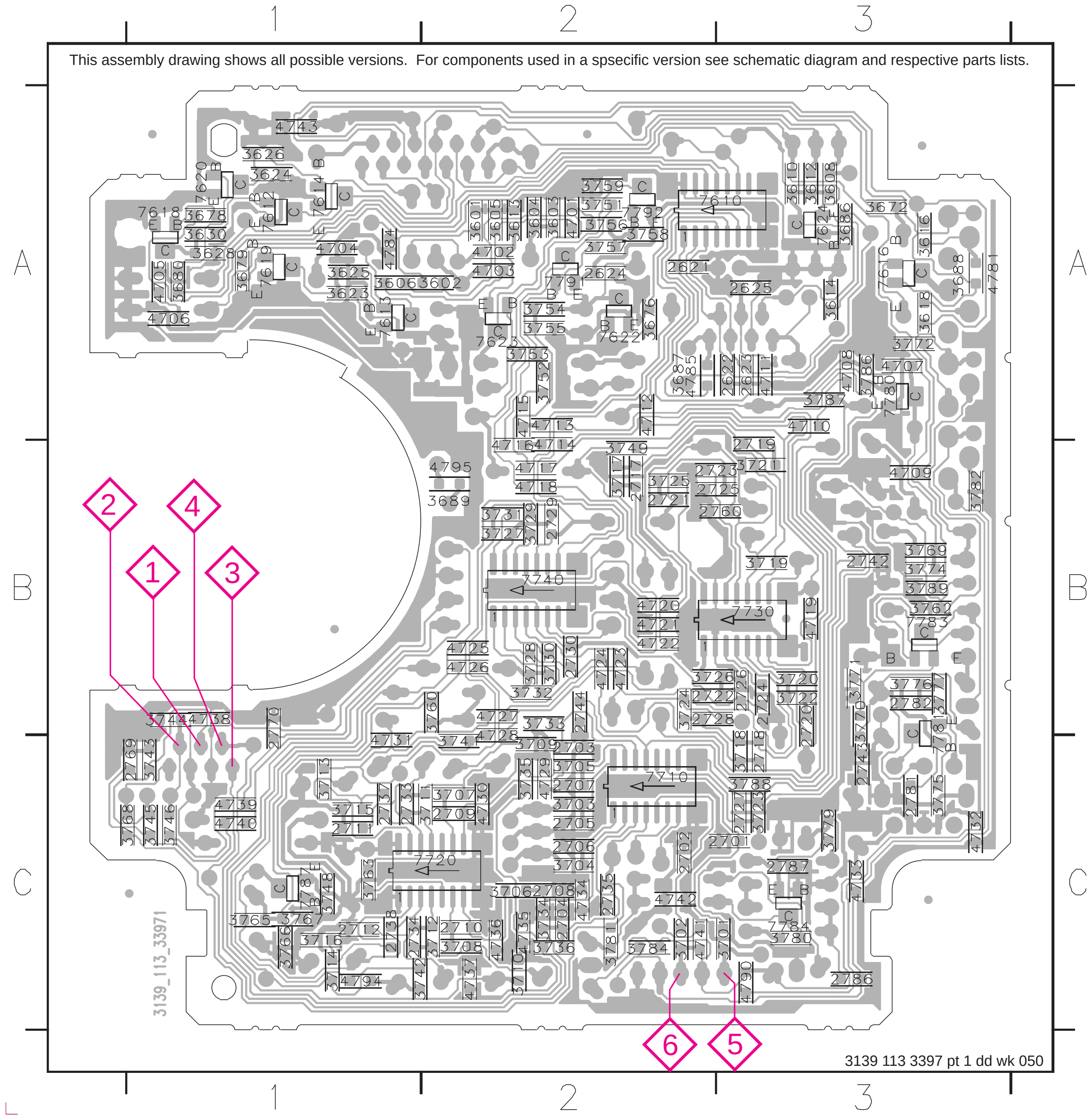
1701	C3	2716	C2	3609	A1	3785	B1	6773	C1	7785	C1	9710	A1	9720	C1	9792	B2
1703	A3	2741	C1	3611	A1	5701	C2	6774	C1	7786	C2	9711	B1	9721	C2	9793	B2
1706	A1	2761	C3	3620	A1	5702	C2	6775	A1	9702	A2	9712	B1	9722	C2		
1710	C2	2762	C3	3622	A1	5703	C1	6776	A1	9703	A2	9713	B1	9723	C2		
1730	C2	2763	C3	3674	A2	6611	A3	6777	B1	9704	A2	9714	B2	9724	C3		
1760	A2	2765	C3	3685	A2	6612	A3	6778	B1	9705	A3	9715	B2	9725	A2		
1770	A3	2780	A1	3761	B1	6614	A1	6782	B2	9706	A1	9716	B2	9726	A3		
2713	C3	2784	C1	3764	C3	6770	B1	6785	B3	9707	A2	9717	B2	9727	A3		
2714	C3	2785	B1	3773	A1	6771	B1	6786	B3	9708	A2	9718	B2	9728	A2		
2715	C2	3607	A1	3778	B1	6772	C1	7782	B1	9709	A2	9719	C1	9791	B2		


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

3139 113 3397 pt 1 dd wk 050

CHIP LAYOUT

2621	A2	2725	B3	3605	A2	3702	C2	3727	B2	3758	A2	3789	B3	4725	B2	7610	A3
2622	A3	2726	B3	3606	A1	3703	C2	3728	B2	3759	A2	4701	A2	4726	B2	7612	A1
2623	A3	2727	C3	3608	A3	3704	C2	3729	B2	3760	B2	4702	A2	4727	B2	7613	A1
2624	A2	2728	B2	3610	A3	3705	C2	3730	B2	3762	B3	4703	A2	4728	C2	7614	A1
2625	A3	2729	B2	3612	A3	3706	C2	3731	B2	3763	C1	4704	A1	4729	C2	7616	A3
2701	C3	2730	B2	3613	A2	3707	C2	3732	B2	3765	C1	4705	A1	4730	C2	7618	A1
2702	C2	2733	C1	3614	A3	3708	C2	3733	B2	3766	C1	4706	A1	4731	C1	7619	A1
2703	C2	2734	C1	3616	A3	3709	C2	3734	C2	3767	C1	4707	A3	4732	C3	7620	A1
2704	C2	2735	C2	3618	A3	3710	C2	3735	C2	3768	C1	4708	A3	4733	C3	7622	A2
2705	C2	2737	C1	3623	A1	3711	C2	3736	C2	3769	B3	4709	B3	4734	C2	7623	A2
2706	C2	2738	C1	3624	A1	3712	C2	3741	C2	3770	B3	4710	A3	4735	C2	7624	A3
2707	C2	2742	B3	3625	A1	3713	C1	3742	C1	3771	B3	4711	A3	4736	C2	7710	C2
2708	C2	2743	C3	3626	A1	3714	C1	3743	C1	3772	A3	4712	A2	4737	C2	7720	C2
2709	C2	2744	B2	3628	A1	3715	C1	3744	B1	3774	B3	4713	A2	4738	B1	7730	B3
2710	C2	2760	B3	3630	A1	3716	C1	3745	C1	3775	C3	4714	B2	4739	C1	7740	B2
2711	C1	2769	C1	3672	A3	3717	B2	3746	C1	3776	B3	4715	A2	4740	C1	7780	A3
2712	C1	2770	B1	3676	A2	3718	C3	3748	C1	3777	B3	4716	B2	4741	C2	7781	B3
2717	B2	2781	C3	3678	A1	3719	B3	3749	B2	3779	C3	4717	B2	4742	C2	7783	B3
2718	C3	2782	B3	3679	A1	3720	B3	3751	A2	3780	C3	4718	B2	4743	A1	7784	C3
2719	B3	2786	C3	3680	A1	3721	B3	3752	A2	3781	C2	4719	B3	4781	A3	7787	C1
2720	B3	2787	C3	3686	A3	3722	B3	3753	A2	3782	B3	4720	B2	4784	A1	7791	A2
2721	B2	3601	A2	3687	A2	3723	C3	3754	A2	3784	C2	4721	B2	4785	A2	7792	A2
2722	B2	3602	A2	3688	A3	3724	B2	3755	A2	3786	A3	4722	B2	4790	C3		
2723	B2	3603	A2	3689	B2	3725	B2	3756	A2	3787	A3	4723	B2	4794	C1		
2724	B3	3604	A2	3701	C3	3726	B2	3757	A2	3788	C3	4724	B2	4795	B2		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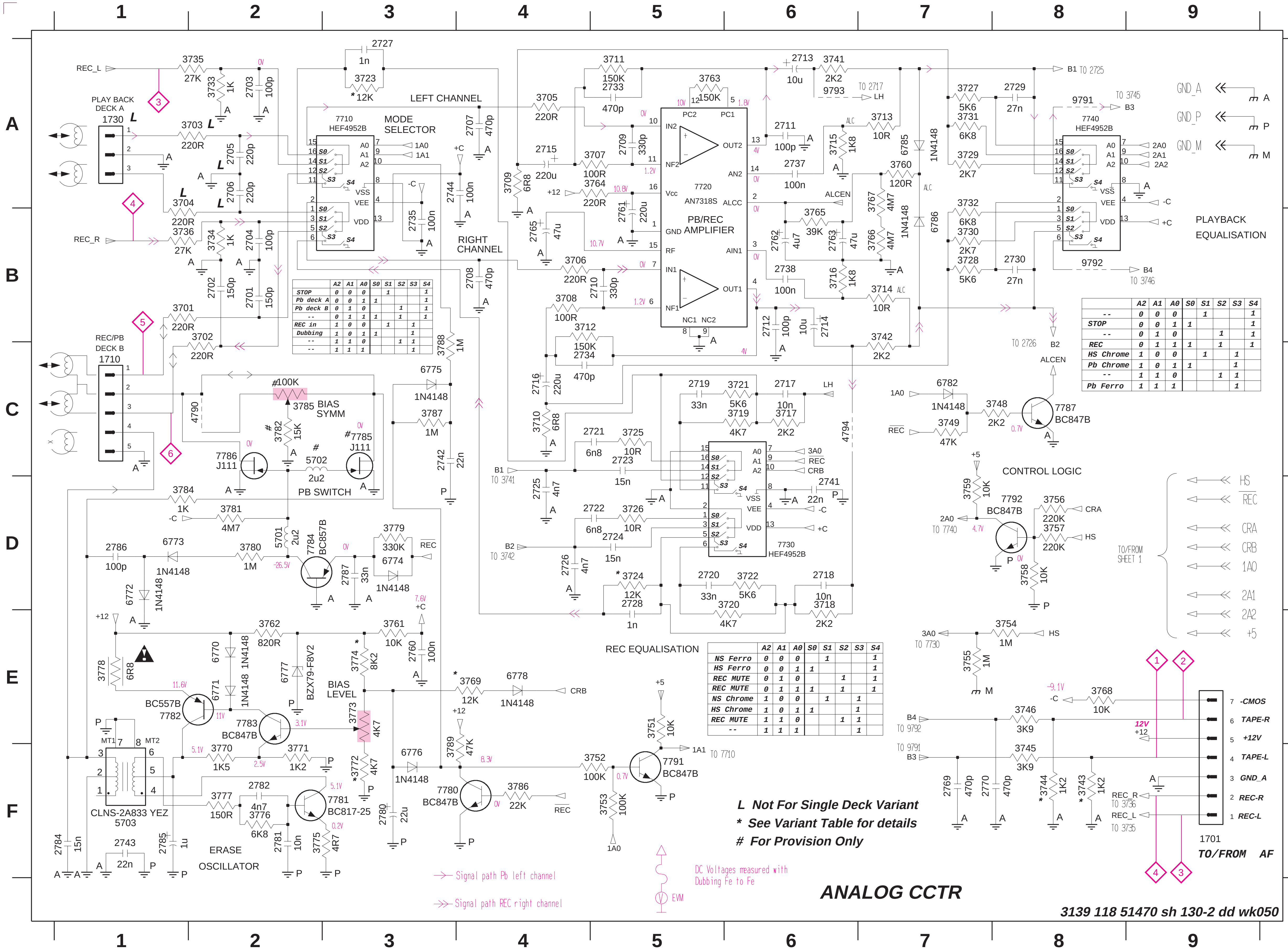
ANALOG CIRCUIT


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
REC_L
REC_R
PLAY BACK
DECK A
1730
REC/PB
DECK B
1710
LEFT CHANNEL
RIGHT CHANNEL
MODE
SELECTOR
7710
HEF4952B
PB/REC
AMPLIFIER
7720
AN7318S
7730
HEF4952B
7740
HEF4952B
PLAYBACK
EQUALISATION
REC EQUALISATION
CONTROL LOGIC
BIAS
SYMM
BIAS
LEVEL
PB SWITCH
ERASE
OSCILLATOR
CLNS-2A833 YEZ
5703
TO/FROM
SHEET 1
1701
TO/FROM AF
-CMOS
TAPE-R
+12V
TAPE-L
GND_A
REC-R
REC-L
GND_A
GND_P
GND_M
HS
REC
CRA
CRB
1A0
2A1
2A2
+5
Signal path Pb left channel
Signal path REC right channel
DC Voltages measured with
Dubbing Fe to Fe
EVM

	A2	A1	A0	S0	S1	S2	S3	S4
STOP	0	0	0		1			1
Pb deck A	0	0	1	1				1
Pb deck B	0	1	0			1		1
--	0	1	1	1		1		1
REC in	1	0	0		1		1	
Dubbing	1	0	1	1			1	
--	1	1	0			1	1	
--	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
NS Ferro	0	0	0		1			1
HS Ferro	0	0	1	1				1
REC MUTE	0	1	0			1		1
REC MUTE	0	1	1	1		1		1
NS Chrome	1	0	0		1		1	
HS Chrome	1	0	1	1			1	
REC MUTE	1	1	0			1	1	
--	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
--	0	0	0		1			1
STOP	0	0	1	1				1
--	0	1	0			1		1
REC	0	1	1	1		1		1
HS Chrome	1	0	0		1		1	
Pb Chrome	1	0	1	1			1	
--	1	1	0			1	1	
Pb Ferro	1	1	1				1	

L Not For Single Deck Variant

**** See Variant Table for details***

# For Provision Only

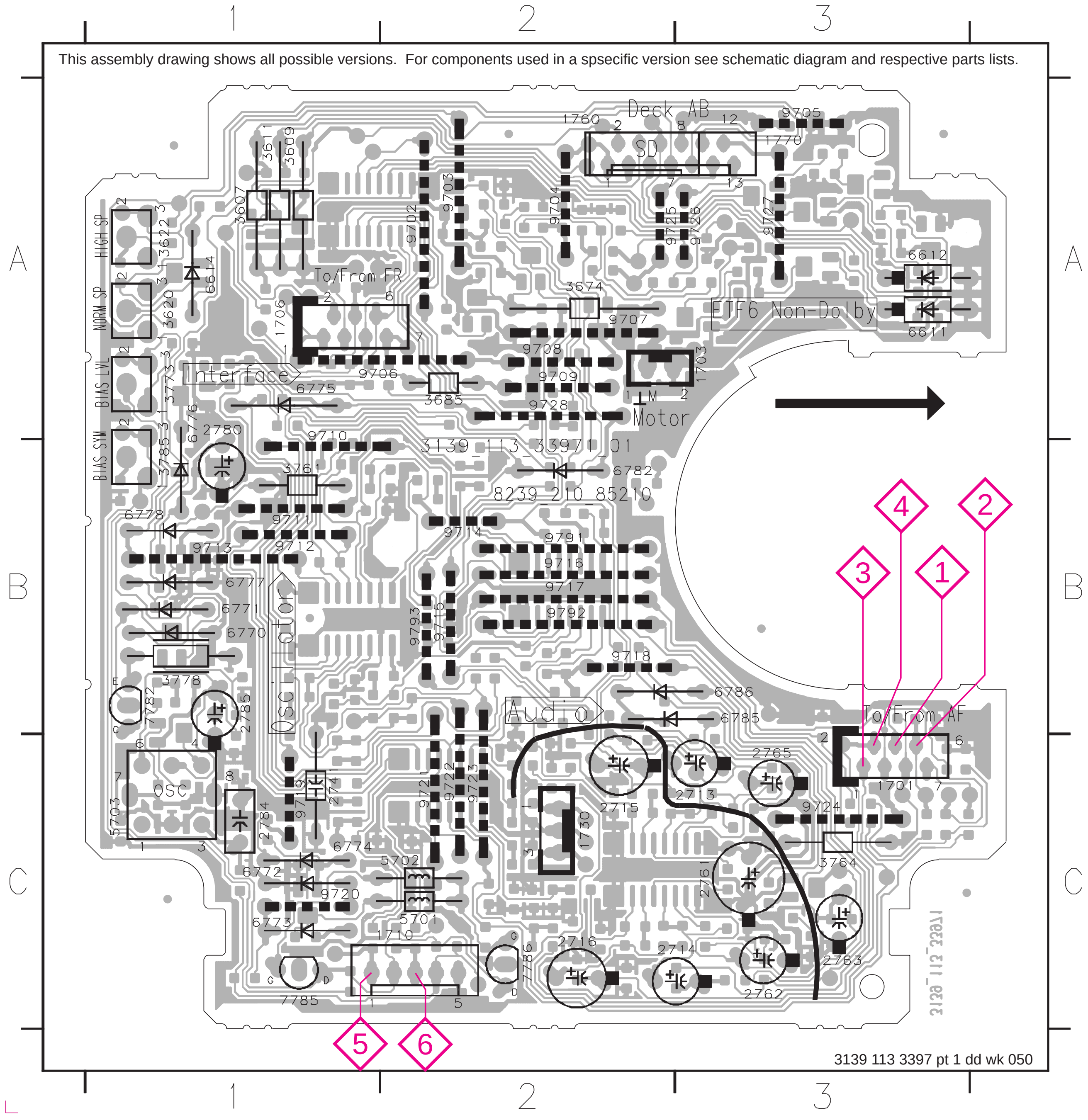
ANALOG CCTR

3139 118 51470 sh 130-2 dd wk050

1701 F9
1710 C1
1730 A1
2701 B2
2702 B2
2703 A2
2704 B2
2705 A2
2706 A2
2707 A4
2708 B4
2709 A5
2710 B5
2711 A6
2712 B6
2713 A6
2714 B6
2715 A4
2716 C4
2717 C6
2718 D6
2719 C5
2720 D5
2721 C5
2722 D5
2723 C5
2724 D5
2725 D4
2726 D4
2727 A3
2728 D5
2729 A8
2730 B8
2733 A5
2734 C4
2735 B3
2737 A6
2738 B6
2741 D6
2742 C3
2743 F1
2744 A3
2760 E3
2761 B5
2762 B6
2763 B6
2765 B4
2769 F7
2770 F7
2780 F3
2781 F2
2782 F2
2784 F1
2785 F1
2786 D1
2787 D3
3701 B1
3702 B2
3703 A2
3704 A1
3705 A4
3706 B4
3707 A5
3708 B4
3709 A4
3710 C4
3711 A5
3712 B4
3713 A7
3714 B7
3715 A6
3716 B6
3717 C6
3718 D6
3719 C6
3720 D6
3721 C6
3722 D6
3723 A3
3724 D5
3725 C5
3726 D5
3727 A7
3728 B7
3729 A7
3730 B7
3731 A7
3732 A7
3733 A2
3734 B2
3735 A2
3736 B1
3741 A6
3742 B7
3743 F8
3744 F8
3745 F8
3746 E8
3748 C8
3749 C7
3751 E5
3752 F5
3753 F5
3754 E8
3755 E7
3756 D8
3757 D8
3758 D8
3759 D7
3760 A7
3761 E3
3762 E2
3763 A5
3764 A5
3765 B6
3766 B7
3767 A7
3768 E8
3769 E4
3770 F2
3771 F2
3772 F3
3773 E3
3774 E3
3775 F2
3776 F2
3777 F2
3778 E1
3779 D3
3780 D2
3781 D2
3782 C2
3784 D1
3785 C2
3786 F4
3787 C3
3788 C3
3789 F3
4790 C2
4794 C6
5701 D2
5702 C2
5703 F1
6770 E2
6771 E2
6772 D1
6773 D1
6774 D3
6775 C3
6776 F3
6777 E2
6778 E4
6782 C7
6785 A7
6786 B7
7710 A3
7720 A5
7730 D6
7740 A8
7780 F4
7781 F3
7782 E1
7783 E2
7784 D2
7785 C3
7786 C2
7787 C8
7791 F5
7792 D8
9791 A8
9792 B8
9793 A6

COMPONENT LAYOUT

1701	C3	2716	C2	3609	A1	3785	B1	6773	C1	7785	C1	9710	A1	9720	C1	9792	B2
1703	A3	2741	C1	3611	A1	5701	C2	6774	C1	7786	C2	9711	B1	9721	C2	9793	B2
1706	A1	2761	C3	3620	A1	5702	C2	6775	A1	9702	A2	9712	B1	9722	C2		
1710	C2	2762	C3	3622	A1	5703	C1	6776	A1	9703	A2	9713	B1	9723	C2		
1730	C2	2763	C3	3674	A2	6611	A3	6777	B1	9704	A2	9714	B2	9724	C3		
1760	A2	2765	C3	3685	A2	6612	A3	6778	B1	9705	A3	9715	B2	9725	A2		
1770	A3	2780	A1	3761	B1	6614	A1	6782	B2	9706	A1	9716	B2	9726	A3		
2713	C3	2784	C1	3764	C3	6770	B1	6785	B3	9707	A2	9717	B2	9727	A3		
2714	C3	2785	B1	3773	A1	6771	B1	6786	B3	9708	A2	9718	B2	9728	A2		
2715	C2	3607	A1	3778	B1	6772	C1	7782	B1	9709	A2	9719	C1	9791	B2		



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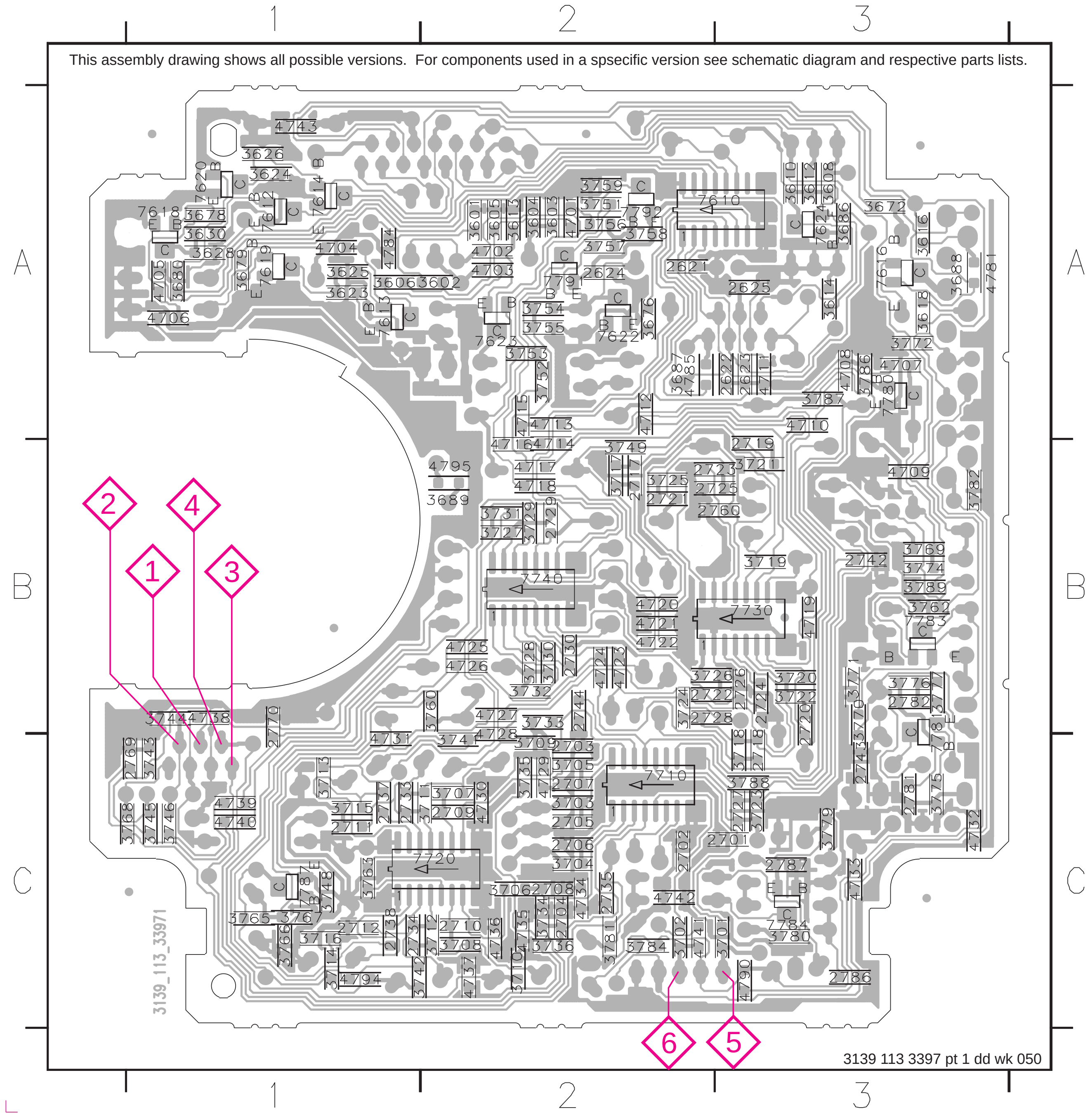
3139 113 3397 pt 1 dd wk 050

CHIP LAYOUT

2621	A2	2725	B3	3605	A2	3702	C2	3727	B2	3758	A2	3789	B3	4725	B2	7610	A3
2622	A3	2726	B3	3606	A1	3703	C2	3728	B2	3759	A2	4701	A2	4726	B2	7612	A1
2623	A3	2727	C3	3608	A3	3704	C2	3729	B2	3760	B2	4702	A2	4727	B2	7613	A1
2624	A2	2728	B2	3610	A3	3705	C2	3730	B2	3762	B3	4703	A2	4728	C2	7614	A1
2625	A3	2729	B2	3612	A3	3706	C2	3731	B2	3763	C1	4704	A1	4729	C2	7616	A3
2701	C3	2730	B2	3613	A2	3707	C2	3732	B2	3765	C1	4705	A1	4730	C2	7618	A1
2702	C2	2733	C1	3614	A3	3708	C2	3733	B2	3766	C1	4706	A1	4731	C1	7619	A1
2703	C2	2734	C1	3616	A3	3709	C2	3734	C2	3767	C1	4707	A3	4732	C3	7620	A1
2704	C2	2735	C2	3618	A3	3710	C2	3735	C2	3768	C1	4708	A3	4733	C3	7622	A2
2705	C2	2737	C1	3623	A1	3711	C2	3736	C2	3769	B3	4709	B3	4734	C2	7623	A2
2706	C2	2738	C1	3624	A1	3712	C2	3741	C2	3770	B3	4710	A3	4735	C2	7624	A3
2707	C2	2742	B3	3625	A1	3713	C1	3742	C1	3771	B3	4711	A3	4736	C2	7710	C2
2708	C2	2743	C3	3626	A1	3714	C1	3743	C1	3772	A3	4712	A2	4737	C2	7720	C2
2709	C2	2744	B2	3628	A1	3715	C1	3744	B1	3774	B3	4713	A2	4738	B1	7730	B3
2710	C2	2760	B3	3630	A1	3716	C1	3745	C1	3775	C3	4714	B2	4739	C1	7740	B2
2711	C1	2769	C1	3672	A3	3717	B2	3746	C1	3776	B3	4715	A2	4740	C1	7780	A3
2712	C1	2770	B1	3676	A2	3718	C3	3748	C1	3777	B3	4716	B2	4741	C2	7781	B3
2717	B2	2781	C3	3678	A1	3719	B3	3749	B2	3779	C3	4717	B2	4742	C2	7783	B3
2718	C3	2782	B3	3679	A1	3720	B3	3751	A2	3780	C3	4718	B2	4743	A1	7784	C3
2719	B3	2786	C3	3680	A1	3721	B3	3752	A2	3781	C2	4719	B3	4781	A3	7787	C1
2720	B3	2787	C3	3686	A3	3722	B3	3753	A2	3782	B3	4720	B2	4784	A1	7791	A2
2721	B2	3601	A2	3687	A2	3723	C3	3754	A2	3784	C2	4721	B2	4785	A2	7792	A2
2722	B2	3602	A2	3688	A3	3724	B2	3755	A2	3786	A3	4722	B2	4790	C3		
2723	B2	3603	A2	3689	B2	3725	B2	3756	A2	3787	A3	4723	B2	4794	C1		
2724	B3	3604	A2	3701	C3	3726	B2	3757	A2	3788	C3	4724	B2	4795	B2		

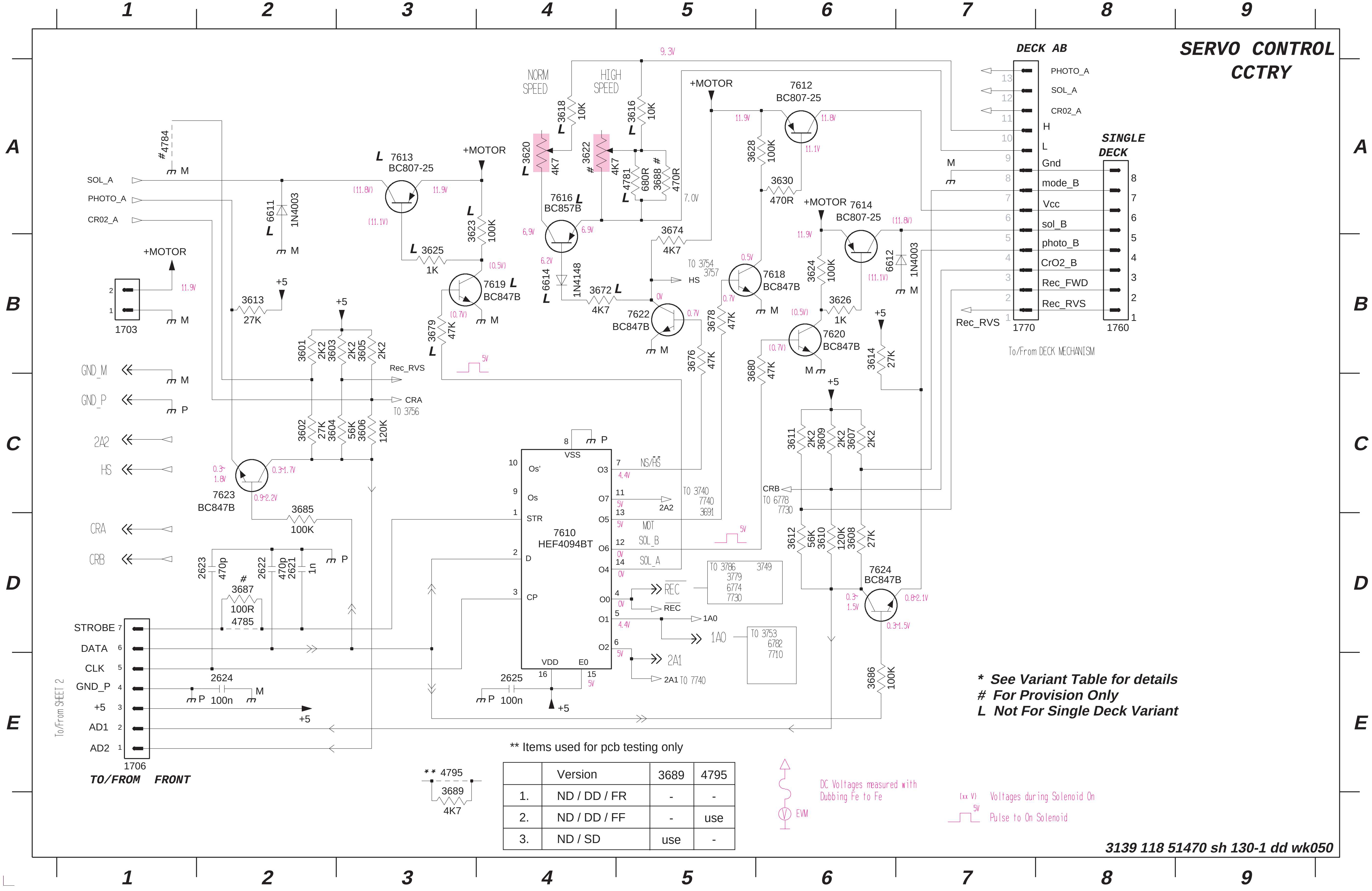


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

3139 113 3397 pt 1 dd wk 050

SERVO CONTROL CIRCUIT

1703 B1	1770 B7	2623 D2	3601 B2	3604 C2	3607 C6	3610 D6	3613 B2	3618 A4	3623 A3	3626 B6	3672 B4	3678 B5	3685 C2	3688 A5	4784 A1	6611 A2	7610 D4	7614 A6	7619 B4	7623 C2
1706 E1	2621 D2	2624 E2	3602 C2	3605 B3	3608 D6	3611 C6	3614 B6	3620 A4	3624 B6	3628 A5	3674 A5	3679 B3	3686 E6	3689 E3	4785 D2	6612 B6	7612 A6	7616 A4	7620 B6	7624 D6
1760 B8	2622 D2	2625 E4	3603 B2	3606 C3	3609 C6	3612 D6	3616 A5	3622 A4	3625 B3	3630 A6	3676 B5	3680 B5	3687 D2	4781 A5	4795 E3	6614 B4	7613 A3	7618 B6	7622 B5	



1
2
3
4
5
6
7
8
9
A
B
C
D
E
SERVO CONTROL CCTRY
DECK AB
PHOTO_A
SOL_A
CR02_A
H
L
Gnd
mode_B
Vcc
sol_B
photo_B
CrO2_B
Rec_FWD
Rec_RVS
13
12
11
10
9
8
7
6
5
4
3
2
1
1770
SINGLE DECK
1760
To/From DECK MECHANISM
Rec_RVS
M
9.3V
NORM SPEED
HIGH SPEED
3618 10K L
3616 10K L
3620 4K7 L
# 3622 4K7
4781 680R L
# 3688 470R
7.0V
+MOTOR
7612 BC807-25
11.9V
11.8V
11.1V
3628 100K
3630 470R
+MOTOR
7614 BC807-25
11.9V
11.8V
6612 1N4003
11.1V
3624 100K
3626 1K
7620 BC847B
0.5V
0.7V
M
+5
3614 27K
L 7613 BC807-25
11.8V
11.9V
11.1V
+MOTOR
L 3623 100K
L 3625 1K
0.5V
7619 L BC847B
0.7V
M
3679 47K L
5V
7616 L BC857B
6.9V
6.9V
6.2V
6614 1N4148 L
3672 L 4K7
3674 4K7
TO 3754 3757
HS
0.5V
7618 BC847B
0.7V
M
0V
7622 BC847B
0.7V
M
3678 47K
3676 47K
3680 47K
# 4784
M
SOL_A
PHOTO_A
CR02_A
6611 L 1N4003
M
+MOTOR
11.9V
1703
2
1
M
3613 27K
+5
+5
3601 2K2
3603 2K2
3605 2K2
Rec_RVS
GND_M
M
GND_P
P
CRA
TO 3756
2A2
HS
3602 27K
3604 56K
3606 120K
3685 100K
0.3- 1.8V
0.3-1.7V
0.9-2.2V
7623 BC847B
CRA
CRB
2623 470p
2622 470p
2621 1n
P
# 3687 100R
4785
STROBE 7
DATA 6
CLK 5
GND_P 4
+5 3
AD1 2
AD2 1
To/From SHEET 2
1706
TO/FROM FRONT
2624 100n
P
M
+5
8 P
VSS
10 Os'
9 Os
1 STR
2 D
3 CP
7610 HEF4094BT
VDD
E0
16
15
5V
2625 100n
P
+5
7 O3 4.4V
NS/HS
11 O7 5V
13 O5 5V
2A2
TO 3740 7740 3691
MOT
12 O6 0V SOL_B
14 O4 0V SOL_A
5V
TO 3786 3749 3779 6774 7730
4 O0 0V REC
REC
5 O1 4.4V 1A0
1A0
TO 3753 6782 7710
6 O2 5V 2A1
2A1 TO 7740
CRB
TO 6778 7730
+5
3611 2K2
3609 2K2
3607 2K2
3612 56K
3610 120K
3608 27K
7624 BC847B
0.3- 1.5V
0.8-2.1V
0.3-1.5V
3686 100K
** 4795
3689 4K7
EVM
DC Voltages measured with Dubbing Fe to Fe
(xx V) Voltages during Solenoid On
5V Pulse to On Solenoid

** Items used for pcb testing only

	Version	3689	4795
1.	ND / DD / FR	-	-
2.	ND / DD / FF	-	use
3.	ND / SD	use	-

* See Variant Table for details
# For Provision Only
L Not For Single Deck Variant

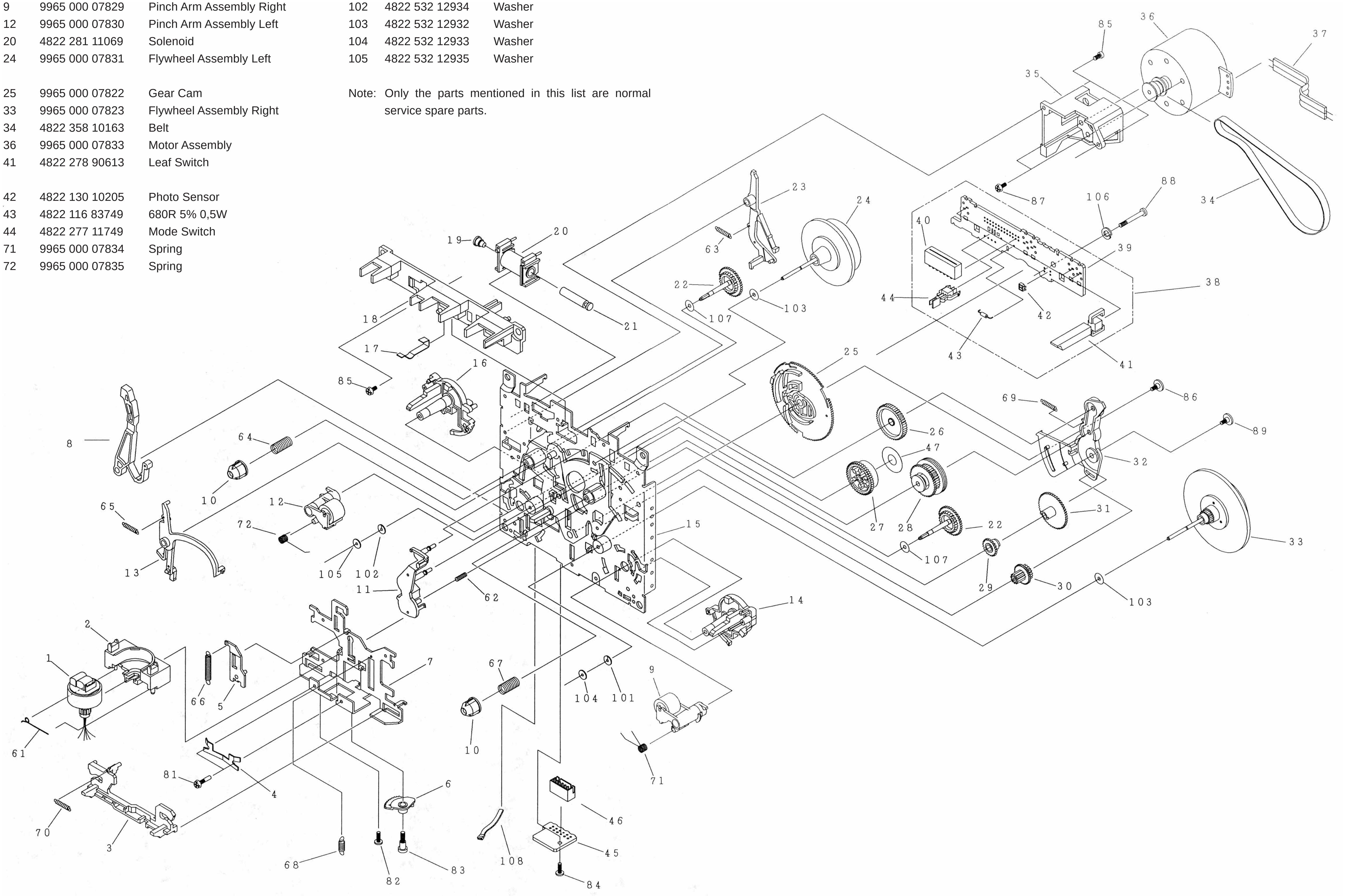
3139 118 51470 sh 130-1 dd wk050

TAPE MECHANISM

1	9965 000 07828	Rec/Pb Head Assembly
9	9965 000 07829	Pinch Arm Assembly Right
12	9965 000 07830	Pinch Arm Assembly Left
20	4822 281 11069	Solenoid
24	9965 000 07831	Flywheel Assembly Left
25	9965 000 07822	Gear Cam
33	9965 000 07823	Flywheel Assembly Right
34	4822 358 10163	Belt
36	9965 000 07833	Motor Assembly
41	4822 278 90613	Leaf Switch
42	4822 130 10205	Photo Sensor
43	4822 116 83749	680R 5% 0,5W
44	4822 277 11749	Mode Switch
71	9965 000 07834	Spring
72	9965 000 07835	Spring

101	4822 532 12931	Washer
102	4822 532 12934	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
105	4822 532 12935	Washer

Note: Only the parts mentioned in this list are normal service spare parts.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101
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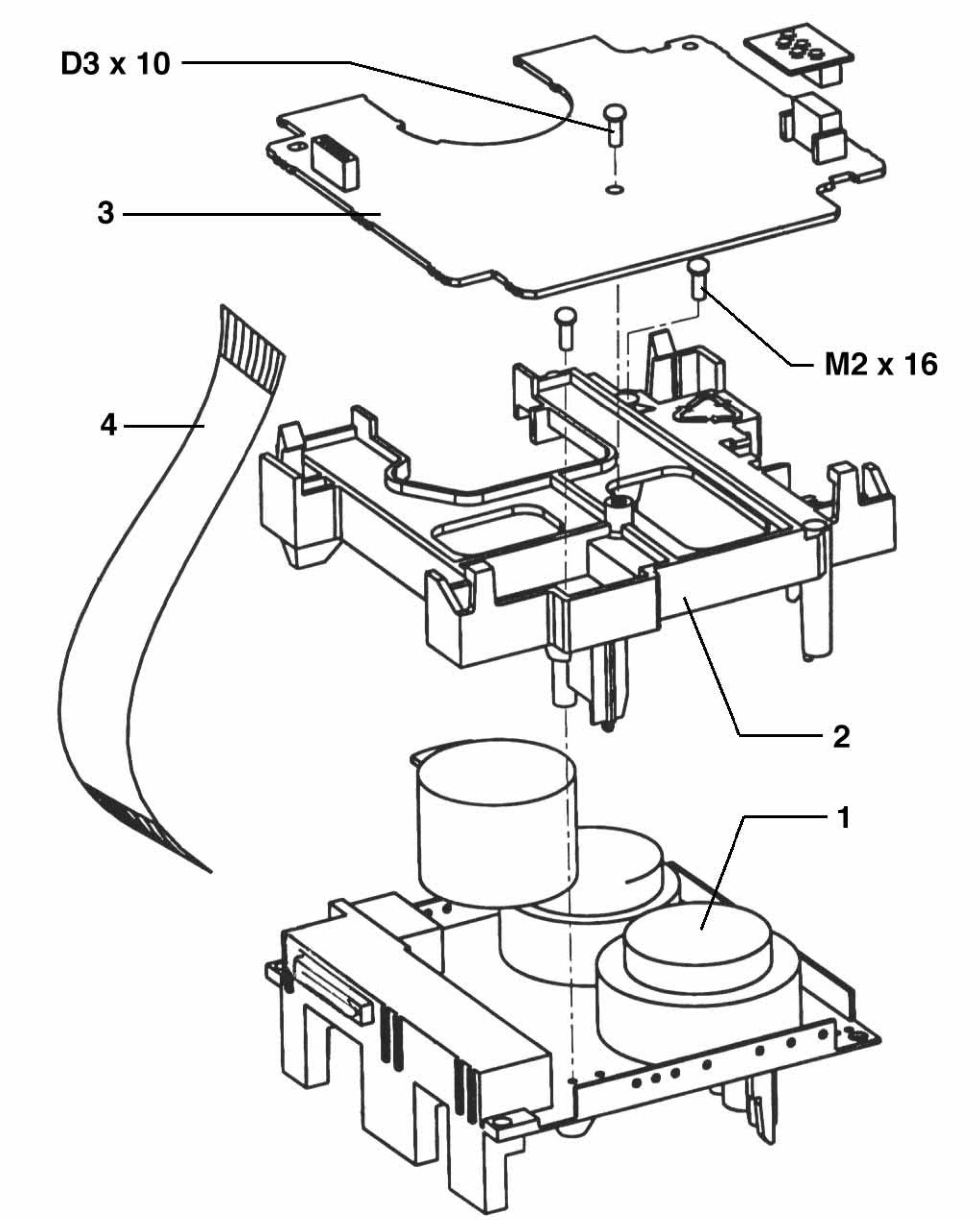
EXPLODED VIEW - TAPE MODULE



1	3139 118 77920	Tape Mechanism CRH4434
4	4822 320 12605	Flex Cable 8P 7,5cm

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - ETF6 BOARD

MISCELLANEOUS

1701	4822 267 10953	Flex Socket 7pin Vert.
1706	4822 267 10953	Flex Socket 7pin Vert.
1760	4822 265 11515	Flex Socket 8pin Vert.

CAPACITORS

2621	5322 122 31647	1nF 10% 63V
2622	5322 122 34099	470pF 10% 63V
2623	5322 122 34099	470pF 10% 63V
2624	4822 126 14585	100nF 10% 50V
2625	4822 126 14585	100nF 10% 50V
2701	5322 122 33538	150pF 2% 63V
2702	5322 122 33538	150pF 2% 63V
2703	5322 122 32531	100pF 5% 50V
2704	5322 122 32531	100pF 5% 50V
2707	5322 122 34099	470pF 10% 63V
2708	5322 122 34099	470pF 10% 63V
2709	5322 122 31863	330pF 5% 63V
2710	5322 122 31863	330pF 5% 63V
2711	5322 122 32531	100pF 5% 50V
2712	5322 122 32531	100pF 5% 50V
2713	4822 124 40248	10µF 20% 63V
2714	4822 124 40248	10µF 20% 63V
2715	4822 124 40196	220µF 20% 16V
2716	4822 124 40196	220µF 20% 16V
2717	4822 122 33177	10nF 20% 50V
2718	4822 122 33177	10nF 20% 50V
2719	4822 126 12105	33nF 5% 50V
2720	4822 126 12105	33nF 5% 50V
2721	5322 122 31866	6,8nF 10% 63V
2722	5322 122 31866	6,8nF 10% 63V
2723	4822 126 13188	15nF 5% 63V
2724	4822 126 13188	15nF 5% 63V
2725	5322 126 10223	4,7nF 10% 63V
2726	5322 126 10223	4,7nF 10% 63V
2727	5322 122 31647	1nF 10% 63V
2728	5322 122 31647	1nF 10% 63V
2729	4822 122 33735	27nF 10% 63V
2730	4822 122 33735	27nF 10% 63V
2733	5322 122 34099	470pF 10% 63V
2734	5322 122 34099	470pF 10% 63V
2735	4822 126 14585	100nF 10% 50V
2737	4822 126 14585	100nF 10% 50V
2738	4822 126 14585	100nF 10% 50V
2741	4822 126 11585	22nF +80/-20% 25V
2742	5322 122 32654	22nF 10% 63V
2743	5322 122 32654	22nF 10% 63V
2744	4822 126 14585	100nF 10% 50V
2760	4822 126 14585	100nF 10% 50V
2761	4822 124 80144	220µF 20% 25V
2762	4822 124 40769	4,7µF 20% 100V
2763	4822 124 40433	47µF 20% 25V
2765	4822 124 40433	47µF 20% 25V
2769	5322 122 34099	470pF 10% 63V
2770	5322 122 34099	470pF 10% 63V
2780	4822 124 81151	22µF 20% 50V
2781	4822 122 33177	10nF 20% 50V
2782	5322 126 10223	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 21913	1µF 20% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 12105	33nF 5% 50V

RESISTORS

3601	4822 117 11449	2k2 5% 0,1W
3602	4822 051 20273	27k 5% 0,1W
3603	4822 117 11449	2k2 5% 0,1W
3604	4822 117 11148	56k 1% 0,1W
3605	4822 117 11449	2k2 5% 0,1W
3606	4822 051 20124	120k 5% 0,1W
3607	4822 116 52256	2k2 5% 0,5W
3608	4822 051 20273	27k 5% 0,1W
3609	4822 116 52256	2k2 5% 0,5W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 116 52256	2k2 5% 0,5W
3612	4822 117 11148	56k 1% 0,1W
3613	4822 051 20273	27k 5% 0,1W
3614	4822 051 20273	27k 5% 0,1W
3624	4822 117 10837	100k 1% 0.1W
3626	4822 051 10102	1k 2% 0,25W
3628	4822 117 10837	100k 1% 0.1W
3630	4822 051 20471	470R 5% 0,1W
3674	4822 116 52283	4k7 5% 0,5W
3676	4822 117 10834	47k 1% 0,1W
3678	4822 117 10834	47k 1% 0,1W
3680	4822 117 10834	47k 1% 0,1W
3685	4822 116 52234	100k 5% 0,5W
3686	4822 117 10837	100k 1% 0.1W
3689	4822 051 20472	4k7 5% 0,1W
3701	4822 117 11503	220R 1% 0.1W
3702	4822 117 11503	220R 1% 0.1W
3705	4822 117 11503	220R 1% 0.1W
3706	4822 117 11503	220R 1% 0.1W
3707	4822 117 11373	100R 1% 0,1W
3708	4822 117 11373	100R 1% 0,1W
3709	4822 051 20688	6R8 5% 0,1W
3710	4822 051 20688	6R8 5% 0,1W
3711	4822 051 20154	150k 5% 0,1W
3712	4822 051 20154	150k 5% 0,1W
3713	4822 051 20109	10R 5% 0,1W
3714	4822 051 20109	10R 5% 0,1W
3715	4822 051 20182	1k8 5% 0,1W
3716	4822 051 20182	1k8 5% 0,1W
3717	4822 117 11449	2k2 5% 0,1W
3718	4822 117 11449	2k2 5% 0,1W

ELECTRICAL PARTS LIST - ETF6 BOARD

RESISTORS

3719	4822 051 20472	4k7 5% 0,1W
3720	4822 051 20472	4k7 5% 0,1W
3721	4822 051 20562	5k6 5% 0,1W
3722	4822 051 20562	5k6 5% 0,1W
3723	4822 117 11383	12k 1% 0,1W
3724	4822 117 11383	12k 1% 0,1W
3725	4822 051 20109	10R 5% 0,1W
3726	4822 051 20109	10R 5% 0,1W
3727	4822 051 20562	5k6 5% 0,1W
3728	4822 051 20562	5k6 5% 0,1W
3729	4822 117 12955	2k7 1% 0,1W
3730	4822 117 12955	2k7 1% 0,1W
3731	4822 117 11507	6k8 1% 0,1W
3732	4822 117 11507	6k8 1% 0,1W
3733	4822 051 10102	1k 2% 0,25W
3734	4822 051 10102	1k 2% 0,25W
3735	4822 051 20273	27k 5% 0,1W
3736	4822 051 20273	27k 5% 0,1W
3741	4822 117 11449	2k2 5% 0,1W
3742	4822 117 11449	2k2 5% 0,1W
3743	4822 051 20122	1k2 5% 0,1W
3744	4822 051 20122	1k2 5% 0,1W
3745	4822 051 20392	3k9 5% 0,1W
3746	4822 051 20392	3k9 5% 0,1W
3748	4822 117 11449	2k2 5% 0,1W
3749	4822 117 10834	47k 1% 0,1W
3751	4822 117 10833	10k 1% 0,1W
3752	4822 117 10837	100k 1% 0.1W
3753	4822 117 10837	100k 1% 0.1W
3754	4822 051 20105	1M 5% 0,1W
3755	4822 051 20105	1M 5% 0,1W
3756	4822 117 13579	220k 1% 0.1W
3757	4822 117 13579	220k 1% 0.1W
3758	4822 117 10833	10k 1% 0,1W
3759	4822 117 10833	10k 1% 0,1W
3760	4822 051 20121	120R 5% 0,1W
3761	4822 050 21003	10k 1% 0,6W
3762	4822 117 11454	820R 1% 0,1W
3763	4822 051 20154	150k 5% 0,1W
3764	4822 116 83872	220R 5% 0,5W
3765	4822 051 20393	39k 5% 0,1W
3766	4822 051 20475	4M7 5% 0,1W
3767	4822 051 20475	4M7 5% 0,1W
3768	4822 117 10833	10k 1% 0,1W
3769	4822 117 11383	12k 1% 0,1W
3770	4822 117 11139	1k5 1% 0,1W
3771	4822 051 20122	1k2 5% 0,1W
3772	4822 051 20472	4k7 5% 0,1W
3773	4822 100 12227	Trimmer 4k7 30% 0,1W
3774	4822 117 10833	10k 1% 0,1W
3775	4822 051 20478	4R7 5% 0,1W
3776	4822 117 11507	6k8 1% 0,1W
3777	4822 117 10353	150R 1% 0,1W
3778	4822 052 10688	⚠ 6R8 5% 0,33W
3779	4822 051 20334	330k 5% 0,1W
3780	4822 051 20105	1M 5% 0,1W
3781	4822 051 20475	4M7 5% 0,1W
3784	4822 051 10102	1k 2% 0,25W
3786	4822 051 20223	22k 5% 0,1W
3787	4822 051 20105	1M 5% 0,1W
3788	4822 051 20105	1M 5% 0,1W
3789	4822 117 10834	47k 1% 0,1W
4701	4822 051 20008	0R Jumper 0805
4702	4822 051 20008	0R Jumper 0805
4703	4822 051 20008	0R Jumper 0805
4704	4822 051 20008	0R Jumper 0805
4705	4822 051 20008	0R Jumper 0805
4706	4822 051 20008	0R Jumper 0805
4707	4822 051 20008	0R Jumper 0805
4708	4822 051 20008	0R Jumper 0805
4709	4822 051 20008	0R Jumper 0805
4710	4822 051 20008	0R Jumper 0805
4711	4822 051 20008	0R Jumper 0805
4712	4822 051 20008	0R Jumper 0805
4713	4822 051 20008	0R Jumper 0805
4714	4822 051 20008	0R Jumper 0805
4715	4822 051 20008	0R Jumper 0805
4716	4822 051 20008	0R Jumper 0805
4717	4822 051 20008	0R Jumper 0805
4718	4822 051 20008	0R Jumper 0805
4719	4822 051 20008	0R Jumper 0805
4720	4822 051 20008	0R Jumper 0805
4721	4822 051 20008	0R Jumper 0805
4722	4822 051 20008	0R Jumper 0805
4723	4822 051 20008	0R Jumper 0805
4724	4822 051 20008	0R Jumper 0805
4725	4822 051 20008	0R Jumper 0805
4726	4822 051 20008	0R Jumper 0805
4727	4822 051 20008	0R Jumper 0805
4728	4822 051 20008	0R Jumper 0805
4729	4822 051 20008	0R Jumper 0805
4730	4822 051 20008	0R Jumper 0805
4731	4822 051 20008	0R Jumper 0805
4732	4822 051 20008	0R Jumper 0805
4733	4822 051 20008	0R Jumper 0805
4734	4822 051 20008	0R Jumper 0805
4735	4822 051 20008	0R Jumper 0805
4736	4822 051 20008	0R Jumper 0805
4737	4822 051 20008	0R Jumper 0805
4738	4822 051 20008	0R Jumper 0805
4739	4822 051 20008	0R Jumper 0805
4740	4822 051 20008	0R Jumper 0805
4741	4822 051 20008	0R Jumper 0805
4742	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - ETF6 BOARD

RESISTORS

4785	4822 051 20008	0R Jumper 0805
4790	4822 051 20008	0R Jumper 0805
4794	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5701	4822 157 11477	Coil 2,2µH 5%
5703	4822 156 20946	Osc Coil 100kHz

DIODES

6612	4822 130 31878	1N4003G
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6775	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-B8V2
6778	4822 130 30621	1N4148
6782	4822 130 30621	1N4148
6785	4822 130 30621	1N4148
6786	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7610	5322 209 11306	HEF4094BT
7612	5322 130 60845	BC807-25
7614	5322 130 60845	BC807-25
7618	5322 130 60159	BC847B
7620	5322 130 60159	BC847B
7622	5322 130 60159	BC847B
7623	5322 130 60159	BC847B
7624	5322 130 60159	BC847B
7710	4822 209 32919	HEF4952BT
7720	4822 209 32918	AN7318S
7730	4822 209 32919	HEF4952BT
7740	4822 209 32919	HEF4952BT
7780	5322 130 60159	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	5322 130 60159	BC847B
7784	4822 130 60373	BC857B
7786	4822 130 63494	J111
7787	5322 130 60159	BC847B
7791	5322 130 60159	BC847B
7792	5322 130 60159	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.

3DTC Module

(Basic version)

Layout stage .4

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WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE

- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CD mechanism:

1. Disconnect CD drive flexfoil from old CD drive
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Remove old CD drive
4. Remove short-circuit from flexfoil of CD drive
5. Connect flexfoil to new CD drive
6. Position new CD drive in its studs
7. Remove short-circuit from Laserunit

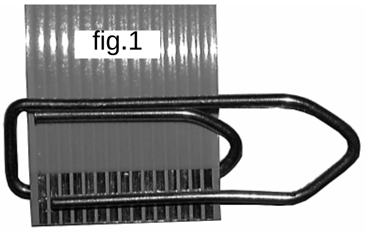
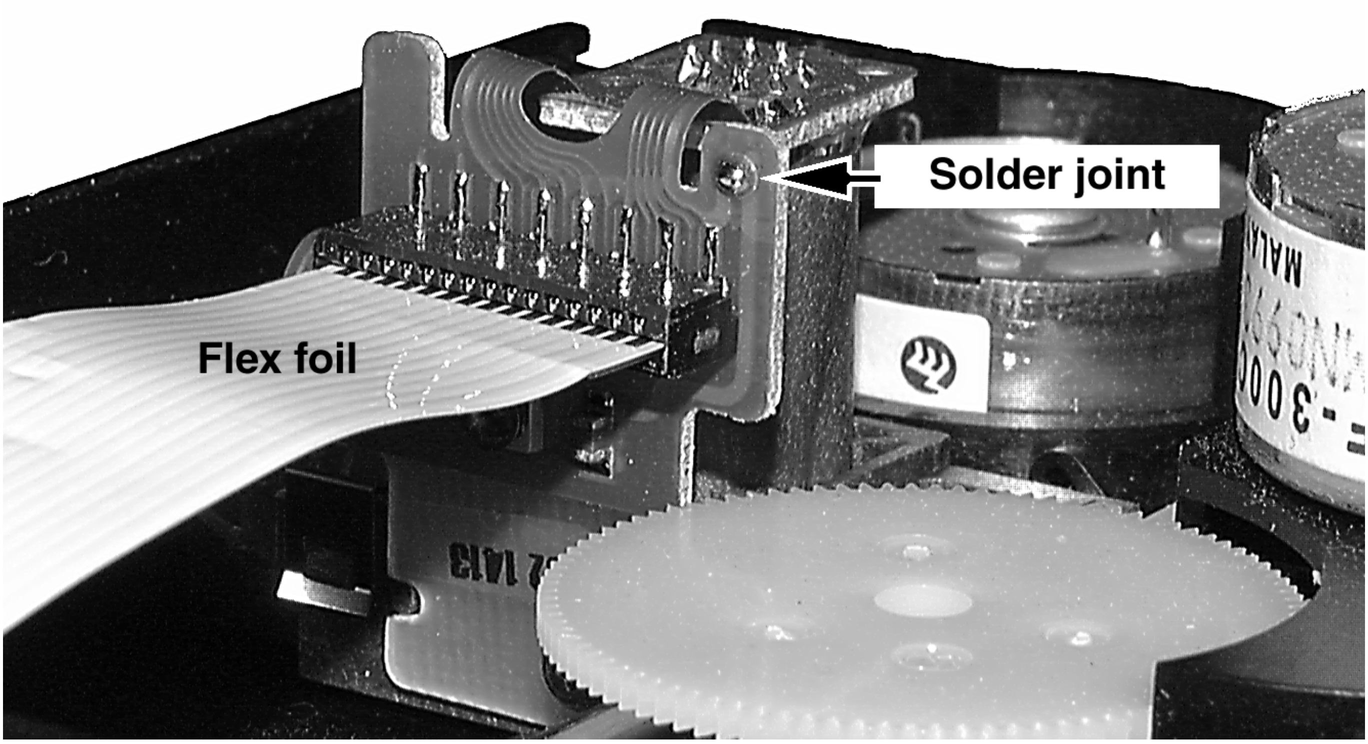


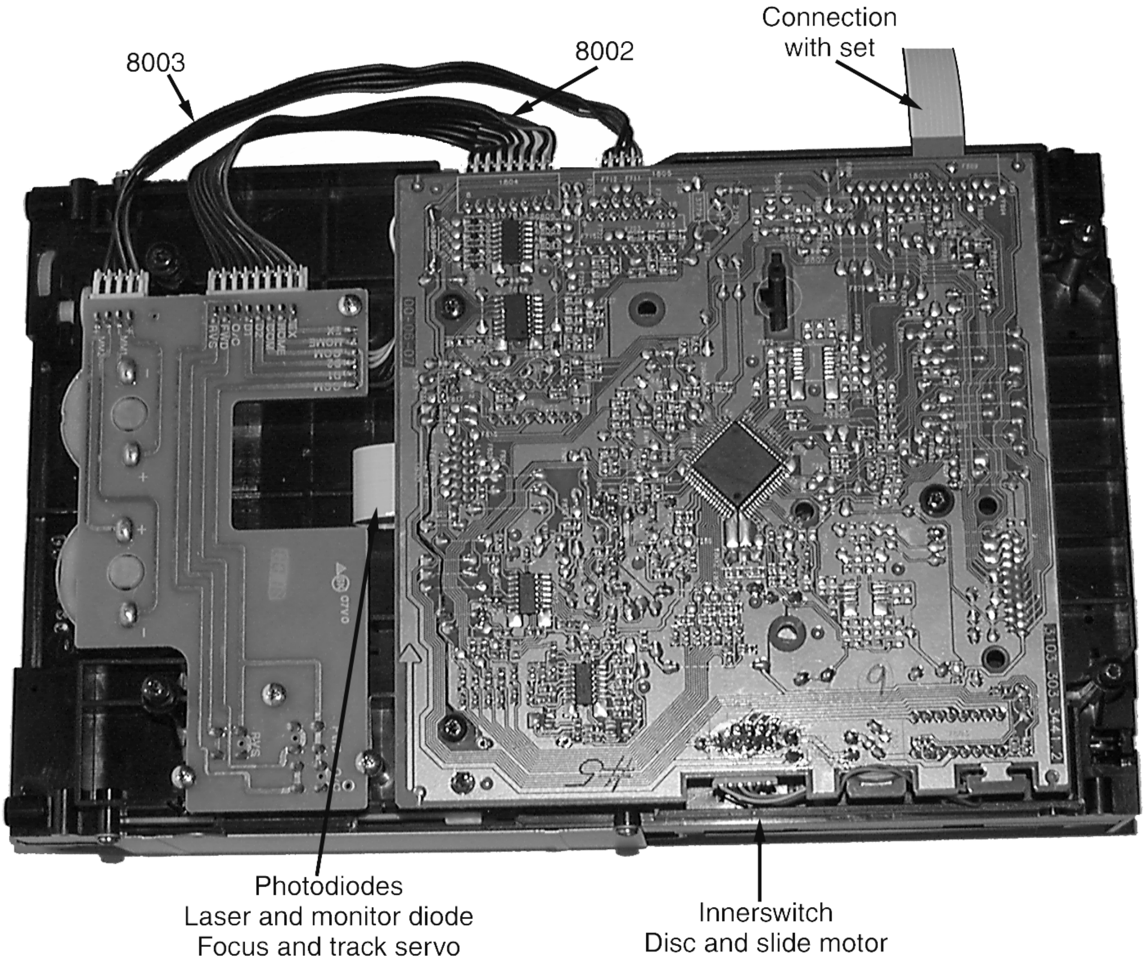
fig.1

Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



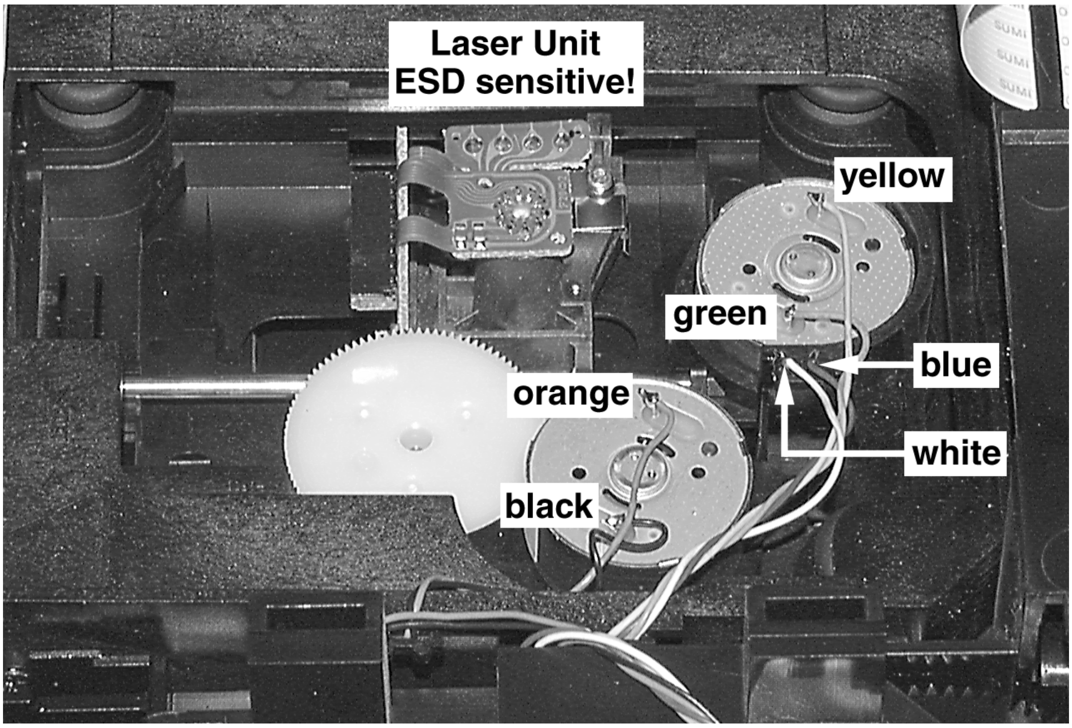
WIRING

Module


8003
8002
Connection
with set
Photodiodes
Laser and monitor diode
Focus and track servo
Innerswitch
Disc and slide motor

WIRING

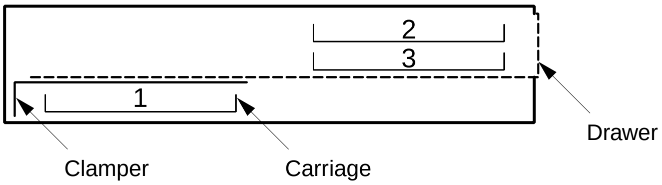
CD Drive


Laser Unit
ESD sensitive!
yellow
green
blue
orange
white
black

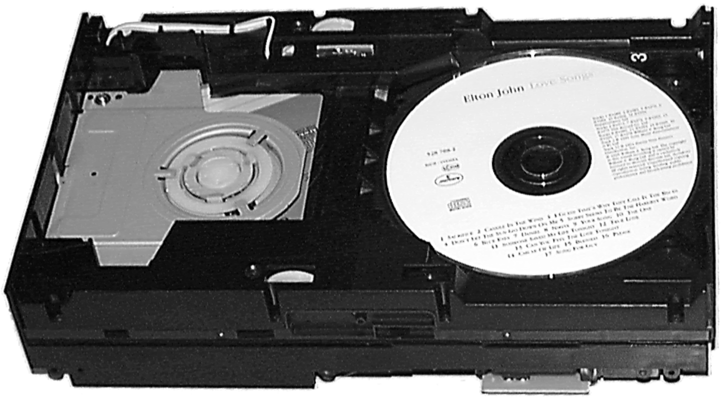
Brief description

On the next pages various actions of the 3 Disc Tray Changer are described with simplified drawings.

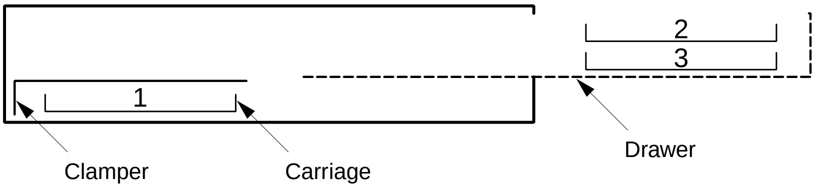
1. Initial state. After Power on the changer is in this position.
The drawer closed
Carriage #1 is in Play position
Carriage #2 and #3 are in home position


2
3
1
Drawer
Clamper
Carriage

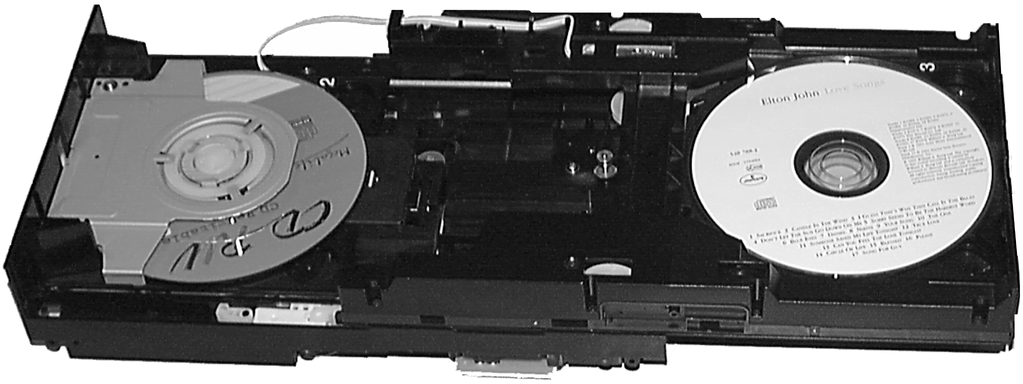
The Changer looks like



2. Tray open.
The Drawer is moved out
Carriage #2 and #3 remain in home position

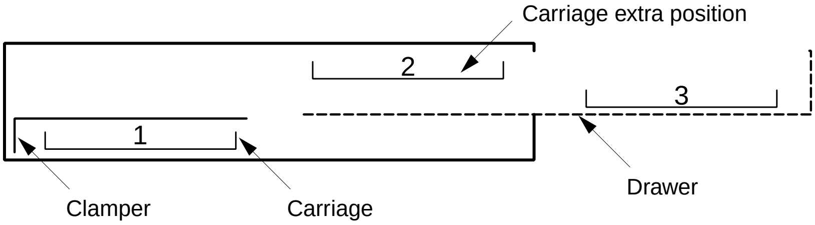

2
3
1
Drawer
Clamper
Carriage

The Changer looks like

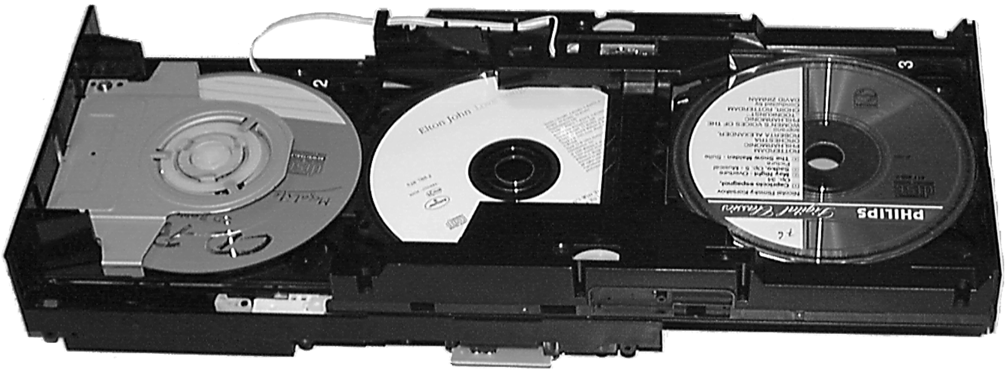


3. Carriage extra.

This position is necessary to get access to the lower carriage. It is also used during disc change.

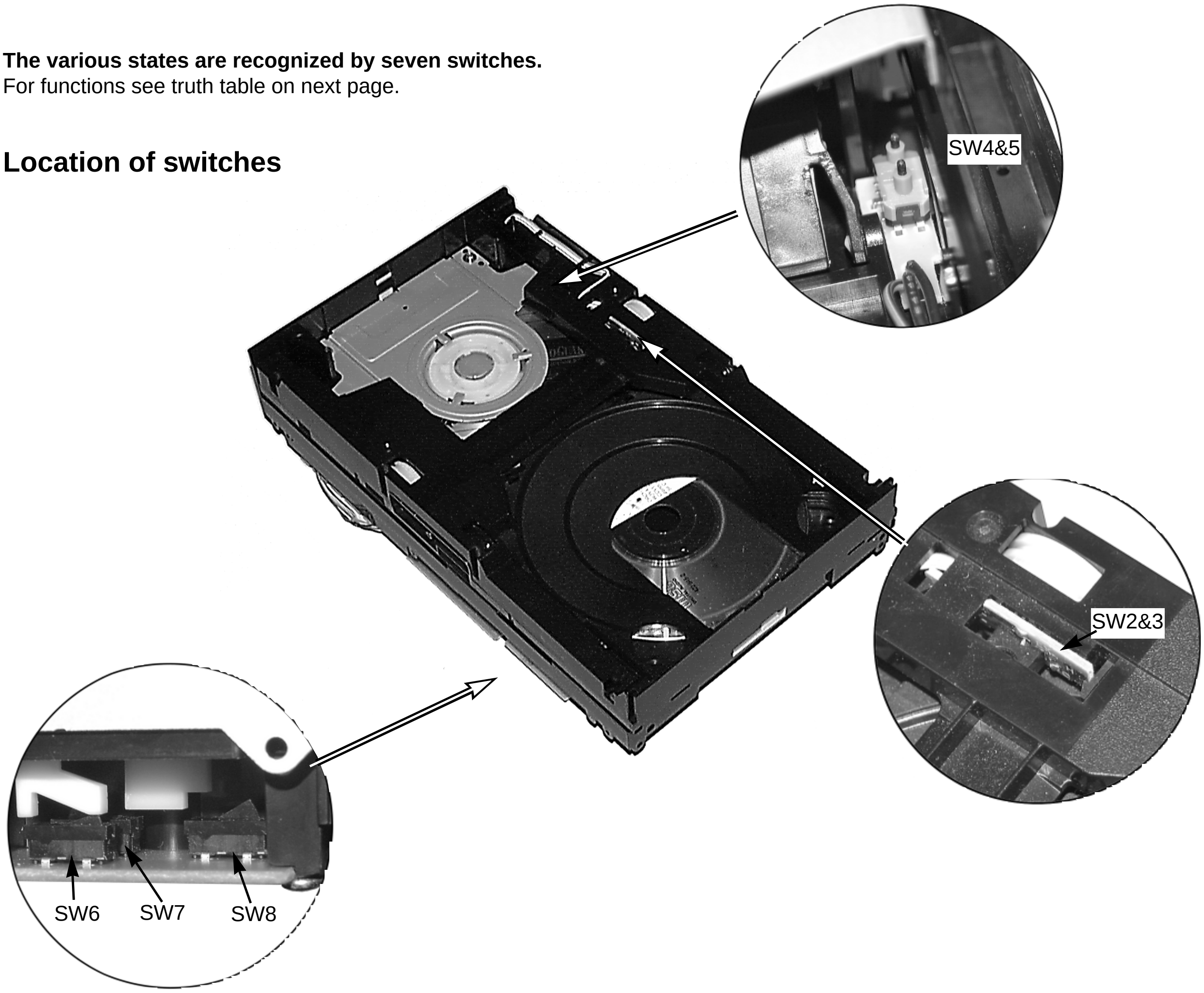

Carriage extra position
2
3
1
Drawer
Clamper
Carriage

The changer looks like



The various states are recognized by seven switches.
For functions see truth table on next page.

Location of switches

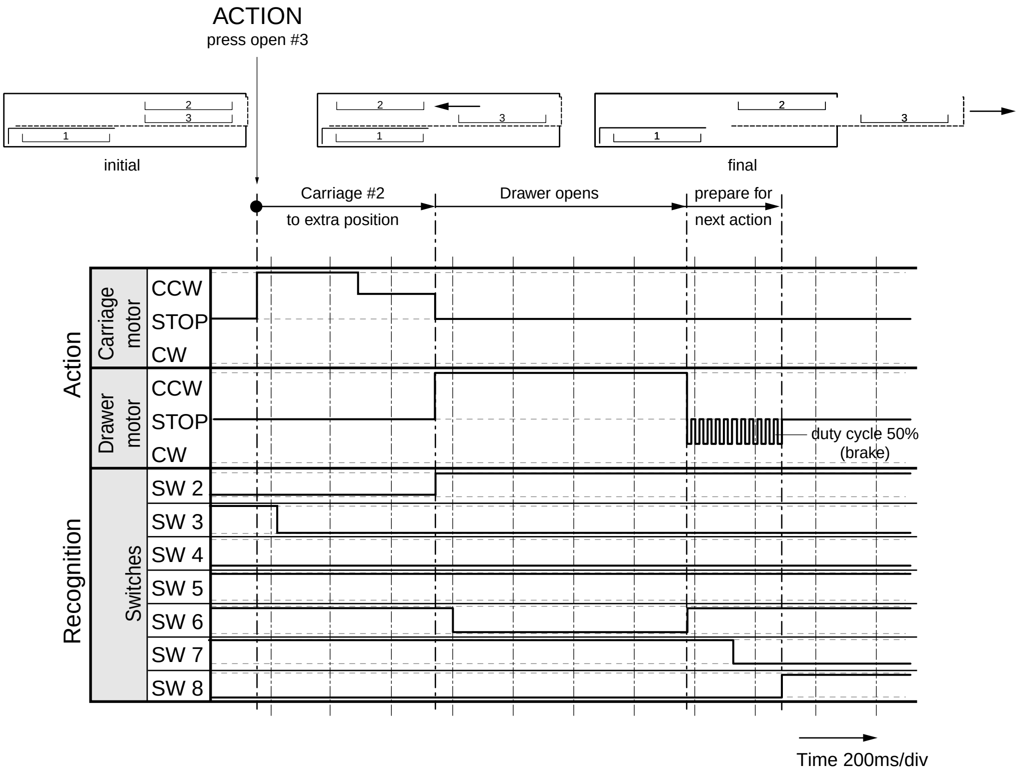

SW4&5
SW2&3
SW6
SW7
SW8

Truth Table

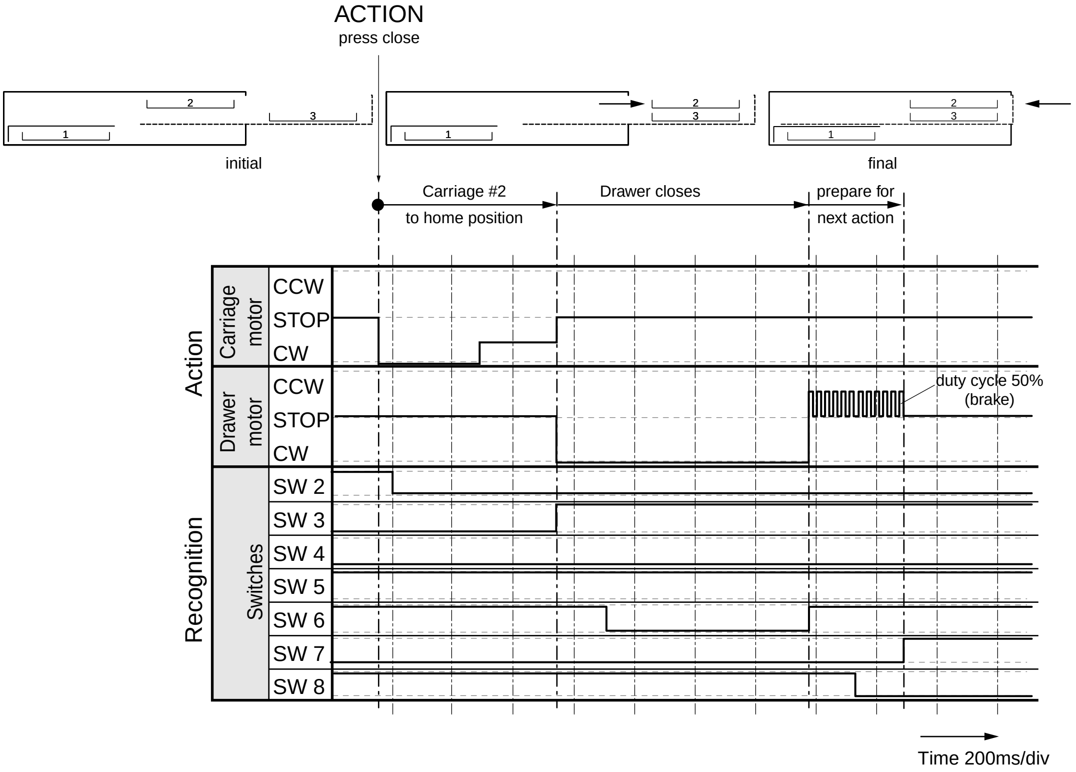
	Register output / Switch							
	Q0	**Q1**	**Q2**	**Q3**	**Q4**	**Q5**	**Q6**	**Q7**
Function	**SW 8**	**SW 7**	**SW 6**	**SW 5**	**SW 4**	**SW 3**	**SW 2**	**-**
Slider reverse recognition	1	0	0	0	0	0	0	X
Slider forward recognition	0	1	0	0	0	0	0	X
Drawer closed recognition	0	0	1	0	0	0	0	X
No carriage under clamper	0	0	0	0	0	0	0	X
Carriage #1 under clamper	0	0	0	0	1	0	0	X
Carriage #2 under clamper	0	0	0	1	0	0	0	X
Carriage #3 under clamper	0	0	0	1	1	0	0	X
Carriage home recognition	0	0	0	0	0	1	0	X
Carriage extra recognition	0	0	0	0	0	0	1	X

Timing Diagrams

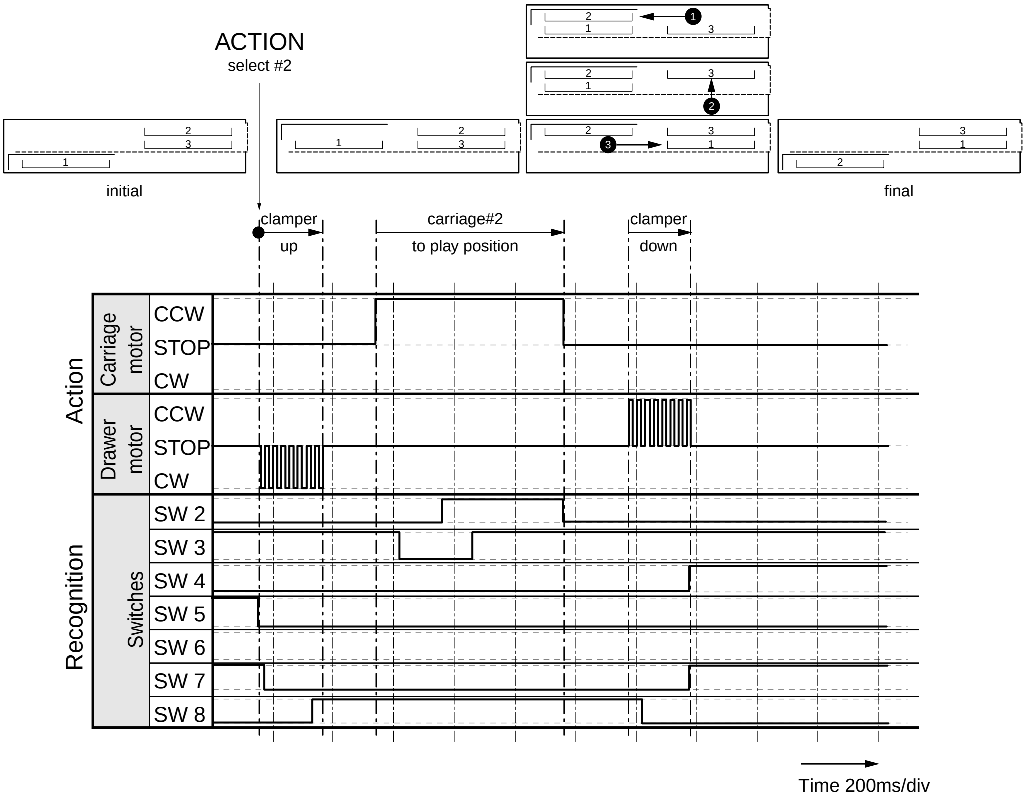
1. Open #3


ACTION
press open #3
initial
final
1
2
3
Carriage #2
to extra position
Drawer opens
prepare for
next action
Action
Carriage motor
Drawer motor
CCW
STOP
CW
Recognition
Switches
SW 2
SW 3
SW 4
SW 5
SW 6
SW 7
SW 8
duty cycle 50%
(brake)
Time 200ms/div

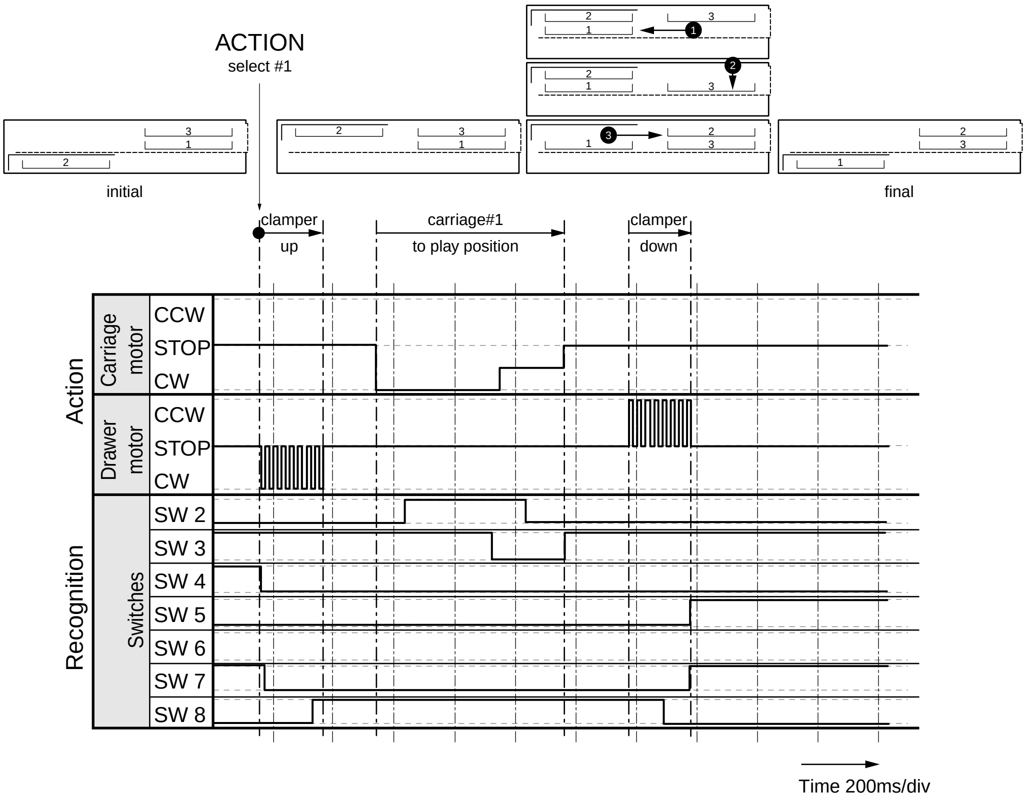
2. Close #3


ACTION
press close
initial
final
1
2
3
Carriage #2
to home position
Drawer closes
prepare for
next action
Action
Carriage motor
Drawer motor
CCW
STOP
CW
Recognition
Switches
SW 2
SW 3
SW 4
SW 5
SW 6
SW 7
SW 8
duty cycle 50%
(brake)
Time 200ms/div

3. Select #2

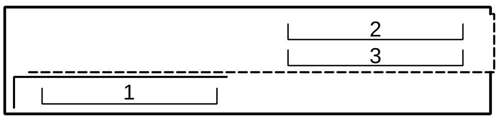

ACTION
select #2
initial
final
1
2
3
clamper
up
carriage#2
to play position
clamper
down
Action
Carriage motor
Drawer motor
CCW
STOP
CW
Recognition
Switches
SW 2
SW 3
SW 4
SW 5
SW 6
SW 7
SW 8
Time 200ms/div

4. Select #1

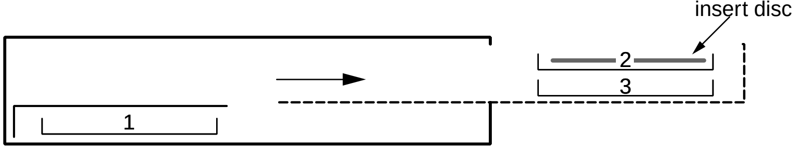

ACTION
select #1
initial
final
1
2
3
clamper
up
carriage#1
to play position
clamper
down
Action
Carriage motor
Drawer motor
CCW
STOP
CW
Recognition
Switches
SW 2
SW 3
SW 4
SW 5
SW 6
SW 7
SW 8
Time 200ms/div

Load all discs

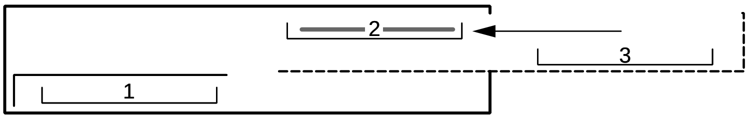
1. Power on. Initial state.



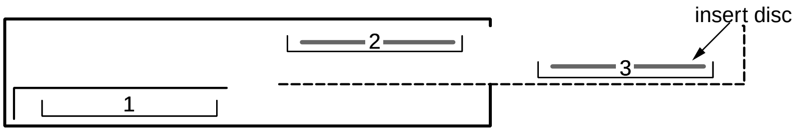
2. Press open #2.
   Tray moves out.
   Load carriage #2.


insert disc
2
3
1

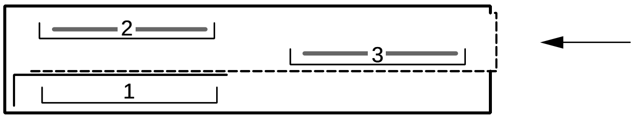
3. Press open #3.
   Carriage #2 moves in extra position.



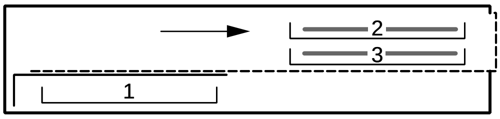
4. Load carriage #3.


insert disc
2
3
1

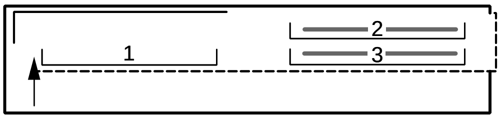
5. Press open #1.
   Tray closes.



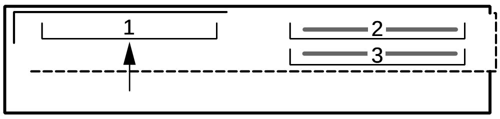
6. Carriage #2 moves in home position.



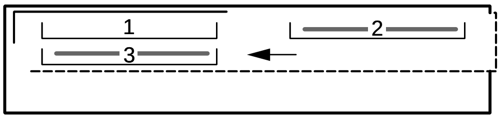
7. Clamper moves to upper position.
   Carriage #1 moves to height of carriage #3.



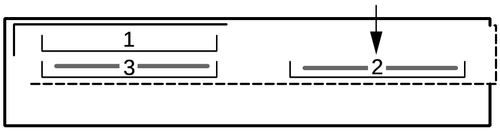
8. Carriage #1 moves to height of carriage #2.



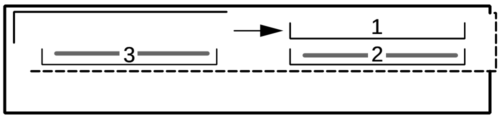
9. Carriage #3 moves below carriage #1.



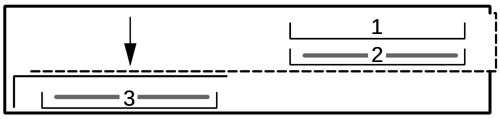
10. Carriage #2 moves down.



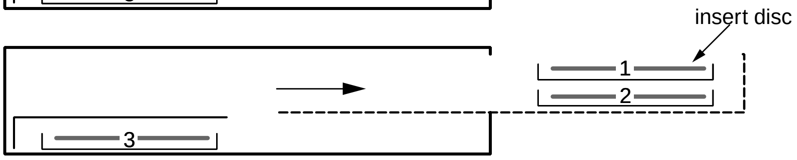
11. Carriage #1 moves in home position.



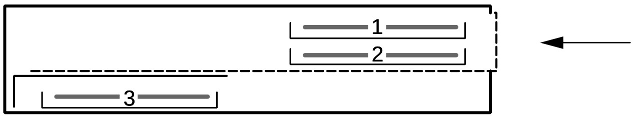
12. Carriage #3 and clamper move down (in play position).



13. Tray moves out.
    Load carriage #1.

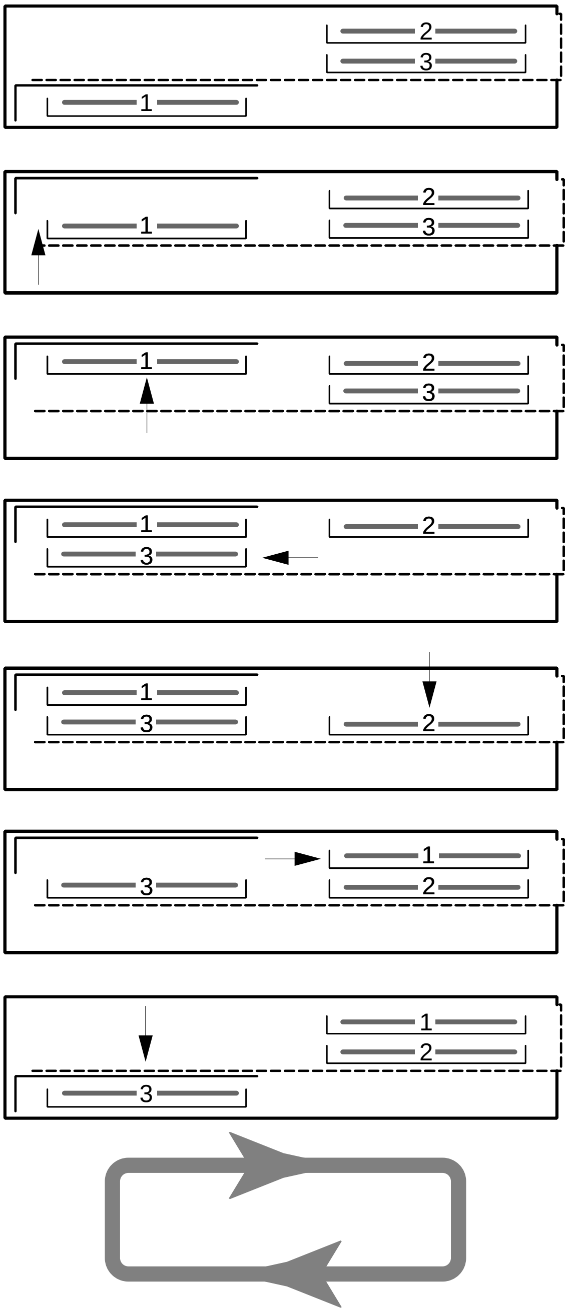

insert disc
1
2
3

14. Press close.
    Tray closes.



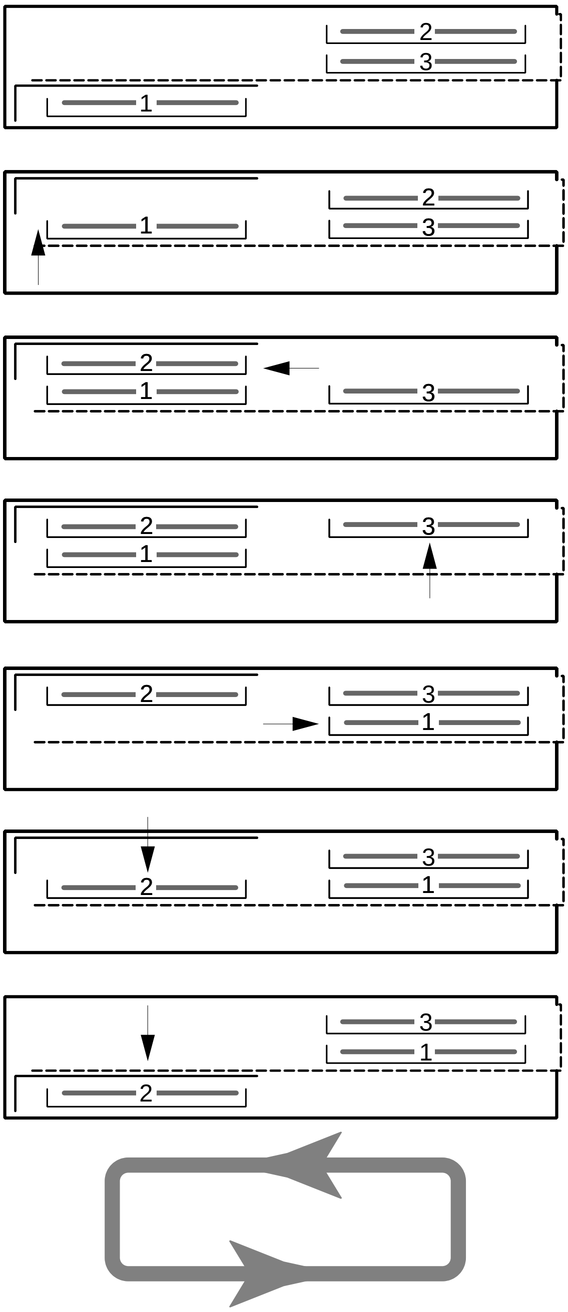
Change *‘backwards’*

E.g. select #3 while playing #1.


2
3
1
2
1
3
1
2
3
1
2
3
1
3
2
1
3
2
1
2
3

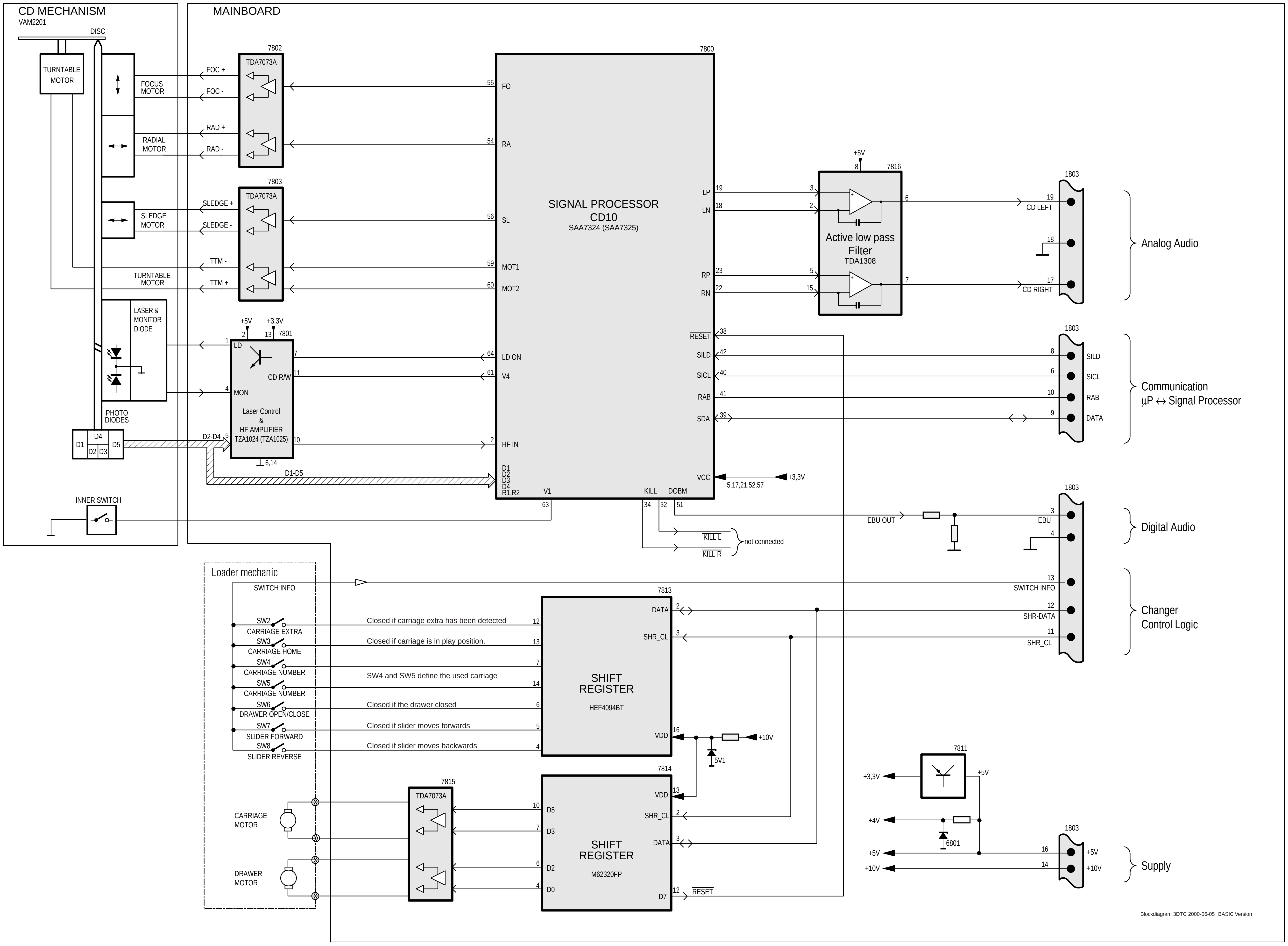
Change *‘forwards’*

E.g. select #2 while playing #1.


2
3
1
2
1
3
2
1
3
2
3
1
2
3
1
3
2
1
3
1
2

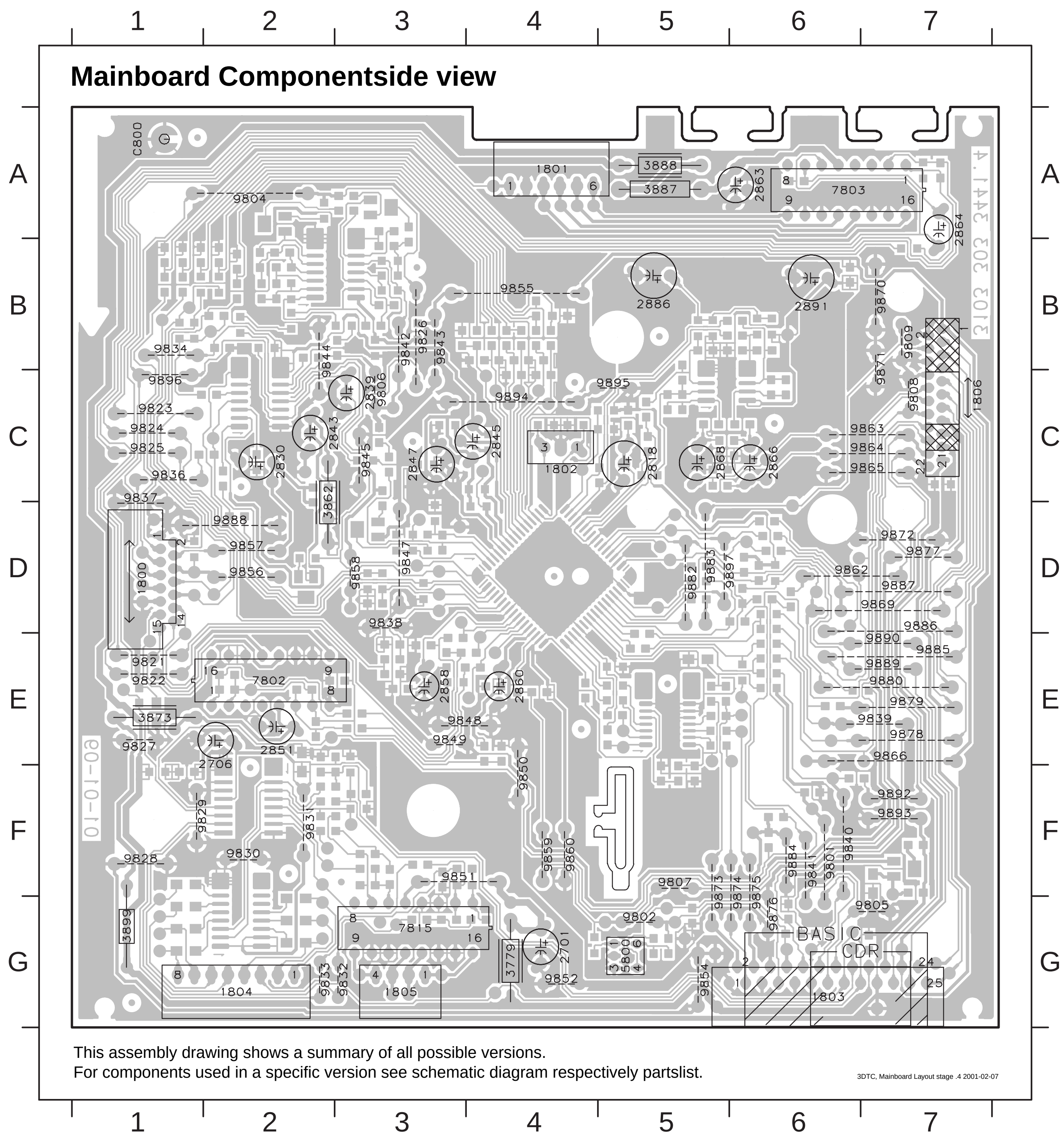
See also timing diagrams (page 10-8).

BLOCK DIAGRAM 3DTC


CD MECHANISM
VAM2201
DISC
TURNTABLE MOTOR
FOCUS MOTOR
RADIAL MOTOR
SLEDGE MOTOR
TURNTABLE MOTOR
LASER & MONITOR DIODE
PHOTO DIODES
D1 D2 D3 D4 D5
INNER SWITCH
MAINBOARD
7802
TDA7073A
FOC +
FOC -
RAD +
RAD -
7803
TDA7073A
SLEDGE +
SLEDGE -
TTM -
TTM +
+5V
+3,3V
7801
LD
MON
CD R/W
Laser Control & HF AMPLIFIER
TZA1024 (TZA1025)
6,14
D2-D4
D1-D5
7800
SIGNAL PROCESSOR
CD10
SAA7324 (SAA7325)
FO
RA
SL
MOT1
MOT2
LD ON
V4
HF IN
D1 D2 D3 D4 R1,R2
V1
KILL
DOBM
LP
LN
RP
RN
RESET
SILD
SICL
RAB
SDA
VCC
5,17,21,52,57
+3,3V
KILL L
KILL R
not connected
EBU OUT
7816
+5V
Active low pass Filter
TDA1308
1803
CD LEFT
CD RIGHT
Analog Audio
SILD
SICL
RAB
DATA
Communication
µP ↔ Signal Processor
EBU
Digital Audio
SWITCH INFO
SHR-DATA
SHR_CL
Changer Control Logic
Loader mechanic
SWITCH INFO
SW2 CARRIAGE EXTRA
SW3 CARRIAGE HOME
SW4 CARRIAGE NUMBER
SW5 CARRIAGE NUMBER
SW6 DRAWER OPEN/CLOSE
SW7 SLIDER FORWARD
SW8 SLIDER REVERSE
Closed if carriage extra has been detected
Closed if carriage is in play position.
SW4 and SW5 define the used carriage
Closed if the drawer closed
Closed if slider moves forwards
Closed if slider moves backwards
7813
DATA
SHR_CL
VDD
SHIFT REGISTER
HEF4094BT
+10V
5V1
7814
SHIFT REGISTER
M62320FP
VDD
SHR_CL
DATA
D5 D3 D2 D0 D7
RESET
7815
TDA7073A
CARRIAGE MOTOR
DRAWER MOTOR
7811
+3,3V
+5V
+4V
6801
+5V
+10V
Supply
Blockdiagram 3DTC 2000-06-05 BASIC Version

1800 D1	2706 E2	2858 E3	3779 G4	7803 A6	9808 C7	9827 E1	9836 C1	9844 B2	9854 G5	9863 C7	9873 F5	9882 D5	9890 E7
1801 A4	2818 C5	2860 E4	3862 D2	7815 G3	9809 B7	9828 F1	9837 C1	9845 C3	9855 B4	9864 C7	9874 F6	9883 D5	9892 F7
1802 C4	2830 C2	2863 A6	3873 E1	9801 F6	9821 E1	9829 F1	9838 D3	9847 D3	9856 D2	9865 C7	9875 F6	9884 F6	9893 F7
1803 G6	2839 C3	2864 A7	3887 A5	9802 G5	9822 E1	9830 F2	9839 E7	9848 E3	9857 D2	9866 E7	9876 G6	9885 E7	9894 C4
1804 G2	2843 C2	2866 C6	3888 A5	9804 A2	9823 C1	9831 F2	9840 F6	9849 E3	9858 D3	9869 D7	9877 D7	9886 D7	9895 C5
1805 G3	2845 C4	2868 C5	3899 G1	9805 G7	9824 C1	9832 G3	9841 F6	9850 F4	9859 F4	9870 B7	9878 E7	9887 D7	9896 C1
1806 C7	2847 C3	2886 B5	5800 G5	9806 C3	9825 C1	9833 G2	9842 B3	9851 F3	9860 F4	9871 B7	9879 E7	9888 D2	9897 D6
2701 G4	2851 E2	2891 B6	7802 E2	9807 F5	9826 B3	9834 B1	9843 B3	9852 G4	9862 D6	9872 D7	9880 E7	9889 E7	C800 A1

Mainboard Componentside view

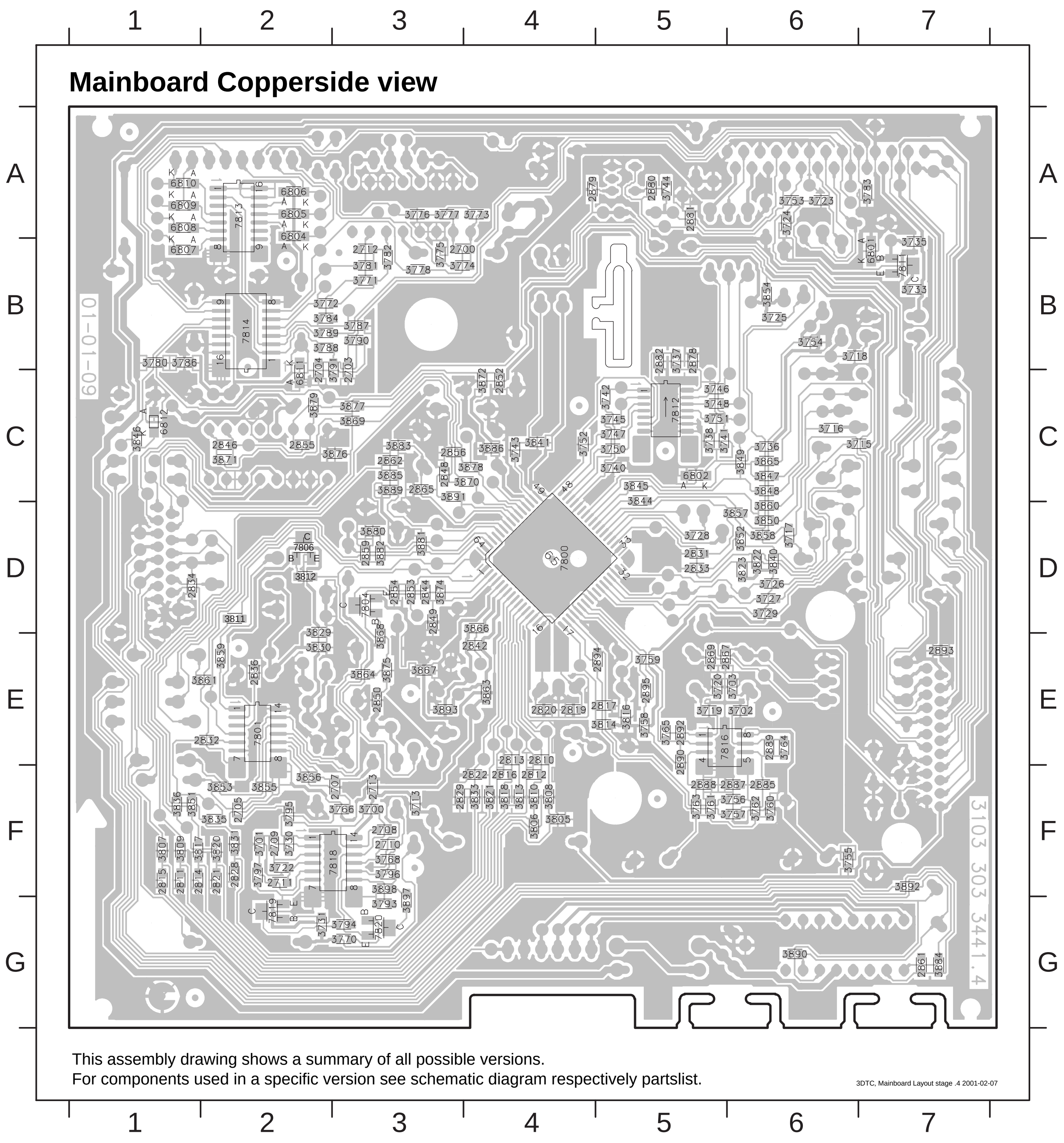


This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

3DTC, Mainboard Layout stage .4 2001-02-07

2700 B3	2814 F1	2842 E4	2867 E5	2895 E5	3725 B6	3743 C4	3759 E5	3776 A3	3794 G3	3817 F1	3845 C5	3860 D6	3877 C3	3897 G3	7804 D3
2703 B3	2815 F1	2844 D3	2869 E5	3700 F3	3726 D6	3744 A5	3760 F6	3777 A3	3795 F2	3818 F4	3846 C1	3861 E2	3878 C4	3898 F3	7806 D2
2704 B2	2816 F4	2846 C2	2878 B5	3701 F2	3727 D6	3745 C5	3761 F5	3778 B3	3796 F3	3820 F2	3847 C6	3863 E4	3879 C2	6801 B7	7811 B7
2705 F2	2817 E5	2848 C3	2879 A4	3702 E6	3728 D5	3746 C5	3762 F6	3780 B1	3797 F2	3821 F4	3848 C6	3864 E3	3880 D3	6802 C5	7812 C5
2707 F3	2819 E4	2849 D3	2880 A5	3703 E6	3729 D6	3747 C5	3763 F5	3781 B3	3805 F4	3822 D6	3849 C6	3865 C6	3881 D3	6804 A2	7813 A2
2708 F3	2820 E4	2850 E3	2881 A5	3713 F3	3730 F2	3748 C5	3764 E6	3782 B3	3806 F4	3823 D6	3850 D6	3866 D4	3882 D3	6805 A2	7814 B2
2709 F2	2821 F2	2852 C4	2882 B5	3715 C6	3731 G2	3750 C5	3765 E5	3783 A7	3807 F1	3829 D2	3851 F1	3867 E3	3883 C3	6806 A2	7816 E5
2710 F3	2822 F4	2853 D3	2885 F6	3716 C6	3733 B7	3751 C5	3766 F3	3784 B2	3808 F4	3830 E2	3852 D6	3868 E3	3884 G7	6807 B1	7818 F3
2711 F2	2828 F2	2854 D3	2887 F6	3717 D6	3735 B7	3752 C4	3768 F3	3786 B1	3809 F1	3831 F2	3853 F2	3869 C3	3885 C3	6808 A1	7819 G2
2712 B3	2829 F3	2855 C2	2888 F5	3718 B6	3736 C6	3753 A6	3770 G3	3787 B3	3810 F4	3833 F4	3854 B6	3870 C4	3886 C4	6809 A1	7820 G3
2713 F3	2831 D5	2856 C3	2889 E6	3719 E5	3737 B5	3754 B6	3771 B3	3788 B2	3811 D2	3835 F2	3855 F2	3871 C2	3889 C3	6810 A1	
2810 E4	2832 E2	2859 D3	2890 E5	3720 E5	3738 C5	3755 F6	3772 B2	3789 B2	3812 D2	3836 F1	3856 F2	3872 C4	3890 G6	6811 C2	
2811 F1	2833 D5	2861 G7	2892 E5	3722 F2	3740 C5	3756 F6	3773 A4	3790 B3	3813 F4	3840 D6	3857 D6	3874 D3	3891 C3	6812 C1	
2812 F4	2834 D1	2862 C3	2893 E7	3723 A6	3741 C5	3757 F6	3774 B3	3791 B3	3814 E5	3841 C4	3858 D6	3875 E3	3892 F7	7800 D4	
2813 E4	2836 E2	2865 C3	2894 E5	3724 A6	3742 C5	3758 E5	3775 B3	3793 G3	3816 E5	3844 C5	3859 E2	3876 C3	3893 E3	7801 E2	

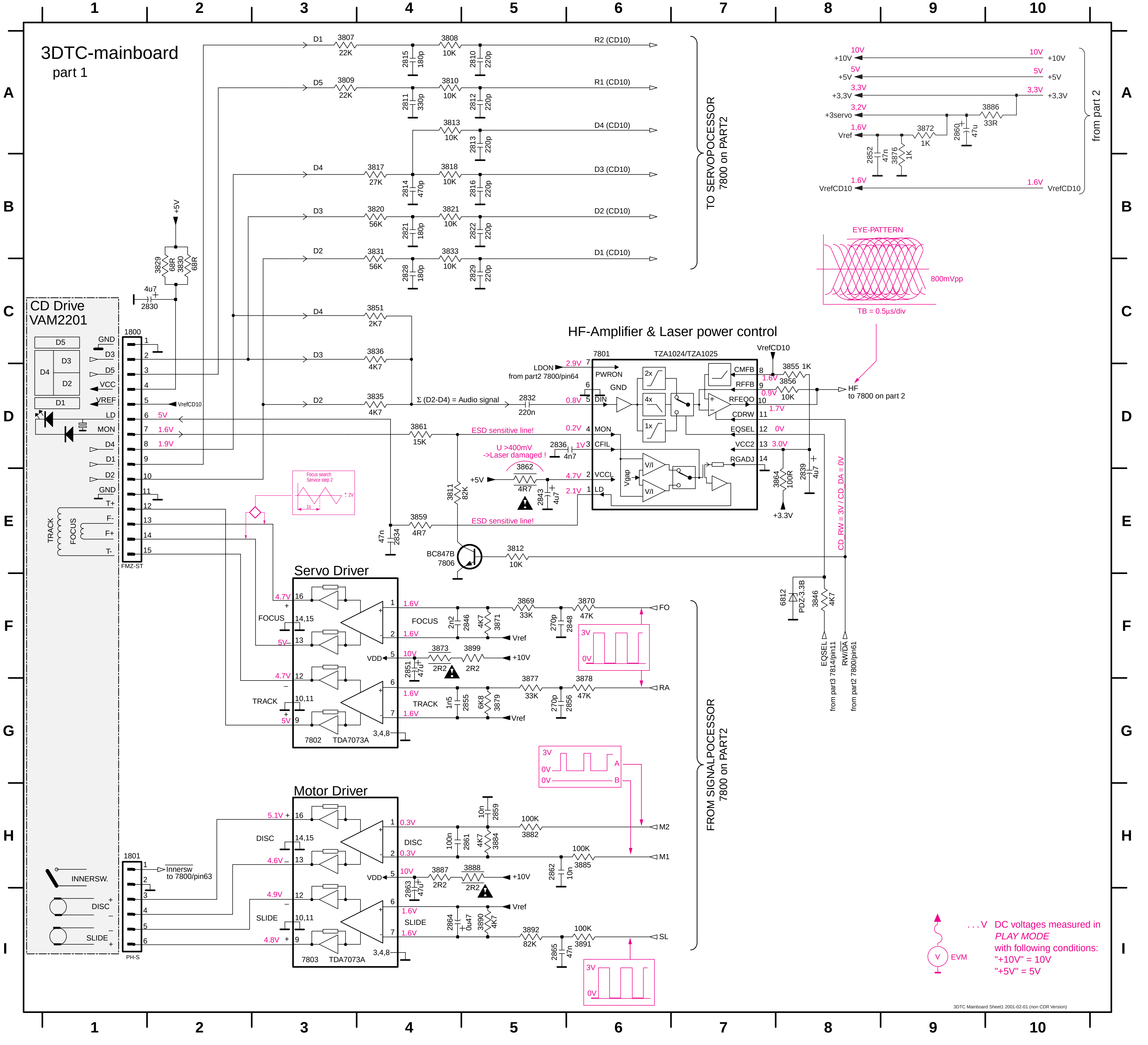
Mainboard Copperside view



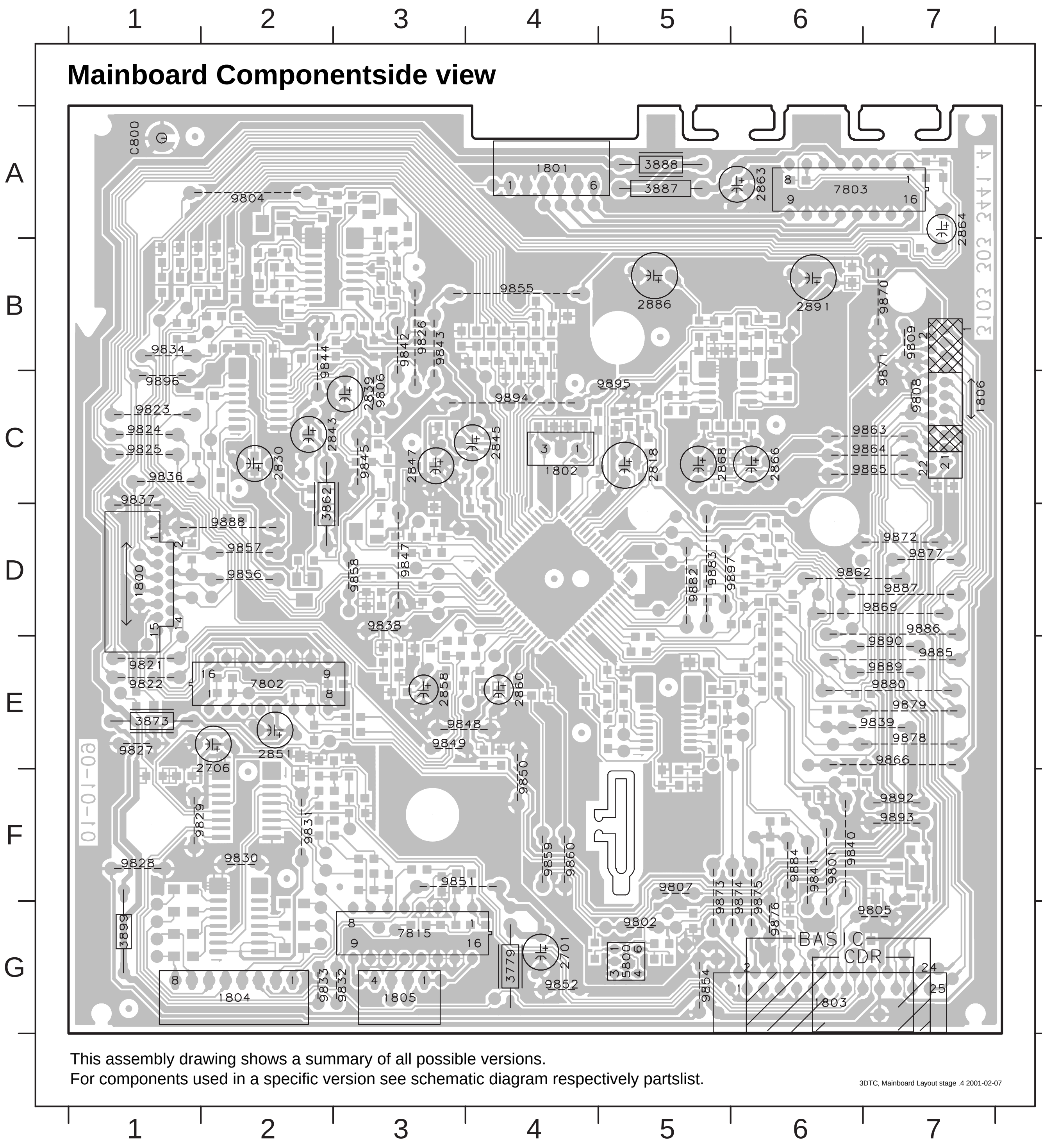
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

3DTC, Mainboard Layout stage .4 2001-02-07

1800	C1
1801	I1
2810	A5
2811	A4
2812	A4
2813	A5
2814	B4
2815	A4
2816	B5
2821	B4
2822	B5
2828	C4
2829	C5
2830	C2
2832	D5
2834	E4
2836	D6
2839	E8
2843	E5
2846	F4
2848	F5
2851	F4
2852	B8
2855	G4
2856	G5
2859	H5
2860	B9
2861	H4
2862	H5
2863	H4
2864	I4
2865	I5
3807	A3
3808	A4
3809	A3
3810	A4
3813	A4
3817	B4
3818	B4
3820	B4
3821	B4
3829	C2
3830	C2
3831	B4
3833	B4
3835	D4
3836	C4
3846	F8
3851	C4
3855	D8
3856	D8
3859	E4
3861	D4
3862	E5
3864	E8
3869	F5
3870	F6
3871	F5
3872	B9
3873	F4
3876	B9
3877	G5
3878	G6
3879	G5
3882	H5
3884	H5
3885	H6
3886	A10
3887	H4
3888	H5
3890	I5
3891	I6
3892	I5
3899	F5
6812	F8
7801	D6
7802	G3
7803	I3


3DTC-mainboard
part 1
1 2 3 4 5 6 7 8 9 10
A B C D E F G H I
CD Drive
VAM2201
1800
GND
D3
D5
VCC
VREF
LD
MON
D4
D1
D2
GND
T+
F-
F+
T-
TRACK
FOCUS
FMZ-ST
1801
INNERSW.
DISC
SLIDE
PH-S
Innersw
to 7800/pin63
+5V
3829 68R
3830 68R
4u7
2830
VrefCD10
3807 22K
3808 10K
3809 22K
3810 10K
3813 10K
3817 27K
3818 10K
3820 56K
3821 10K
3831 56K
3833 10K
2815 180p
2810 220p
2811 330p
2812 220p
2813 220p
2814 470p
2816 220p
2821 180p
2822 220p
2828 180p
2829 220p
R2 (CD10)
R1 (CD10)
D4 (CD10)
D3 (CD10)
D2 (CD10)
D1 (CD10)
TO SERVOPROCESSOR
7800 on PART2
3851 2K7
3836 4K7
3835 4K7
Σ (D2-D4) = Audio signal
2832 220n
3861 15K
ESD sensitive line!
U >400mV
->Laser damaged !
3862 4R7
2843 4u7
2836 4n7
3811 82K
3859 4R7
2834 47n
BC847B
7806
3812 10K
Focus search
Service step 2
1s
2V
HF-Amplifier & Laser power control
7801
TZA1024/TZA1025
LDON
from part2 7800/pin64
PWRON
GND
DIN
MON
CFIL
VCCL
LD
2x
4x
1x
Vgap
V/I
CMFB
RFFB
RFEQO
CDRW
EQSEL
VCC2
RGADJ
2.9V
0.8V
0.2V
1V3
4.7V
2.1V
1.6V
0.9V
1.7V
0V
3.0V
VrefCD10
3855 1K
3856 10K
HF
to 7800 on part 2
3864 100R
2839 4u7
+3.3V
CD RW = 3V / CD DA = 0V
6812
PD2-3.3B
3846 4K7
EQSEL
from part3 7814/pin11
RW/DA
from part2 7800/pin61
10V +10V
5V +5V
3,3V +3,3V
3,2V +3servo
1.6V Vref
1.6V VrefCD10
3872 1K
3886 33R
2860 47u
2852 47n
3876 1K
from part 2
EYE-PATTERN
800mVpp
TB = 0.5µs/div
Servo Driver
7802 TDA7073A
FOCUS
TRACK
VDD
4.7V
5V
1.6V
10V
3869 33K
3870 47K
2846 2n2
3871 4K7
2848 270p
FO
Vref
3873 2R2
3899 2R2
2851 47u
+10V
3877 33K
3878 47K
2855 1n5
3879 6K8
2856 270p
RA
3V
0V
Motor Driver
7803 TDA7073A
DISC
SLIDE
5.1V
4.6V
4.9V
4.8V
0.3V
10V
1.6V
2859 10n
3882 100K
M2
2861 100n
3884 4K7
3885 100K
M1
2862 10n
3887 2R2
3888 2R2
2863 47u
2864 0u47
3890 4K7
3892 82K
3891 100K
SL
2865 47n
A
B
FROM SIGNALPROCESSOR
7800 on PART2
. . . V
DC voltages measured in
PLAY MODE
with following conditions:
"+10V" = 10V
"+5V" = 5V
EVM
3DTC Mainboard Sheet1 2001-02-01 (non CDR Version)

1800	D1	2706	E2	2858	E3	3779	G4	7803	A6	9808	C7	9827	E1	9836	C1	9844	B2	9854	G5	9863	C7	9873	F5	9882	D5	9890	E7
1801	A4	2818	C5	2860	E4	3862	D2	7815	G3	9809	B7	9828	F1	9837	C1	9845	C3	9855	B4	9864	C7	9874	F6	9883	D5	9892	F7
1802	C4	2830	C2	2863	A6	3873	E1	9801	F6	9821	E1	9829	F1	9838	D3	9847	D3	9856	D2	9865	C7	9875	F6	9884	F6	9893	F7
1803	G6	2839	C3	2864	A7	3887	A5	9802	G5	9822	E1	9830	F2	9839	E7	9848	E3	9857	D2	9866	E7	9876	G6	9885	E7	9894	C4
1804	G2	2843	C2	2866	C6	3888	A5	9804	A2	9823	C1	9831	F2	9840	F6	9849	E3	9858	D3	9869	D7	9877	D7	9886	D7	9895	C5
1805	G3	2845	C4	2868	C5	3899	G1	9805	G7	9824	C1	9832	G3	9841	F6	9850	F4	9859	F4	9870	B7	9878	E7	9887	D7	9896	C1
1806	C7	2847	C3	2886	B5	5800	G5	9806	C3	9825	C1	9833	G2	9842	B3	9851	F3	9860	F4	9871	B7	9879	E7	9888	D2	9897	D6
2701	G4	2851	E2	2891	B6	7802	E2	9807	F5	9826	B3	9834	B1	9843	B3	9852	G4	9862	D6	9872	D7	9880	E7	9889	E7	C800	A1

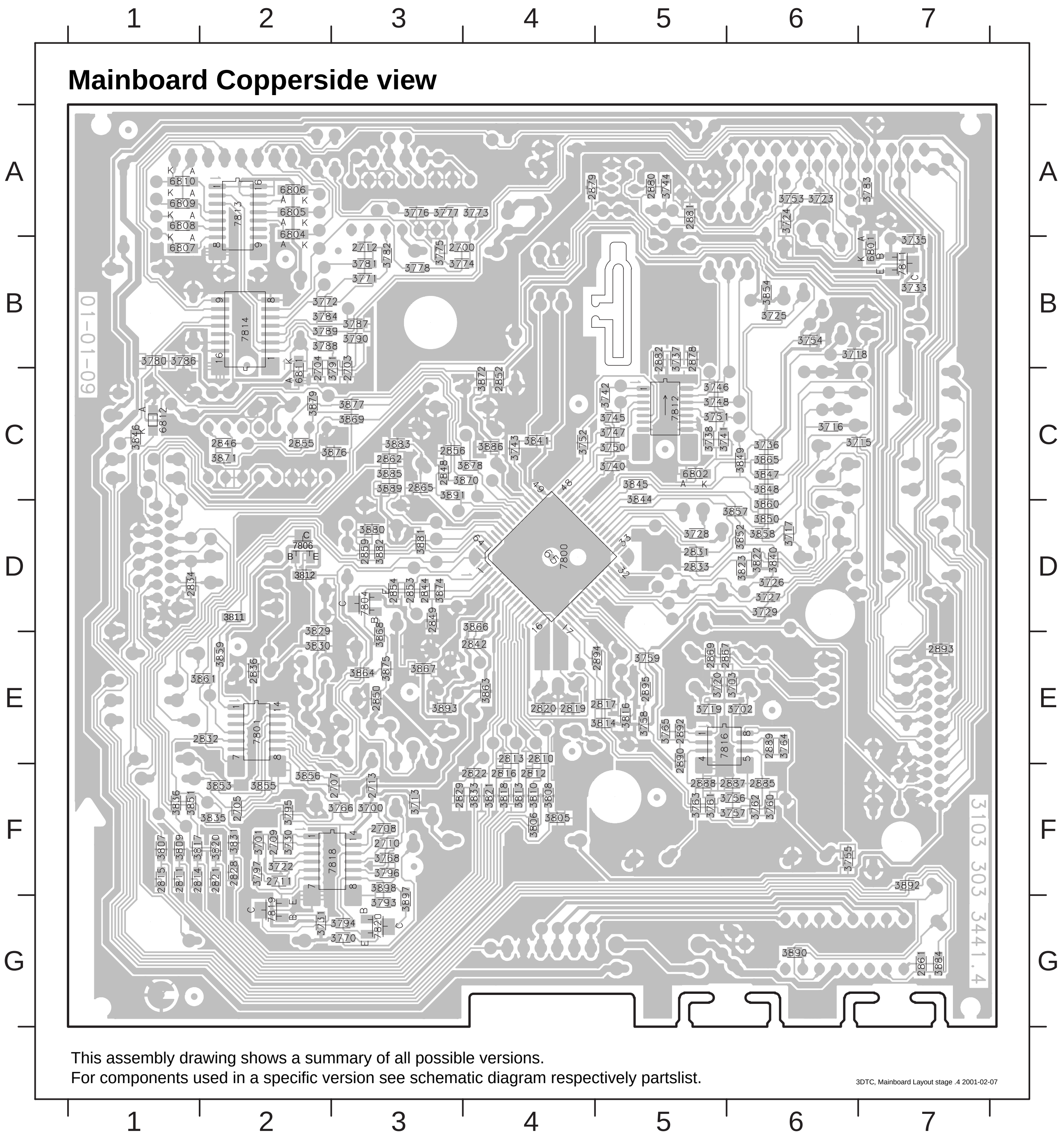


Mainboard Componentside view

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

3DTC, Mainboard Layout stage .4 2001-02-07

2700	B3	2814	F1	2842	E4	2867	E5	2895	E5	3725	B6	3743	C4	3759	E5	3776	A3	3794	G3	3817	F1	3845	C5	3860	D6	3877	C3	3897	G3	7804	D3
2703	B3	2815	F1	2844	D3	2869	E5	3700	F3	3726	D6	3744	A5	3760	F6	3777	A3	3795	F2	3818	F4	3846	C1	3861	E2	3878	C4	3898	F3	7806	D2
2704	B2	2816	F4	2846	C2	2878	B5	3701	F2	3727	D6	3745	C5	3761	F5	3778	B3	3796	F3	3820	F2	3847	C6	3863	E4	3879	C2	6801	B7	7811	B7
2705	F2	2817	E5	2848	C3	2879	A4	3702	E6	3728	D5	3746	C5	3762	F6	3780	B1	3797	F2	3821	F4	3848	C6	3864	E3	3880	D3	6802	C5	7812	C5
2707	F3	2819	E4	2849	D3	2880	A5	3703	E6	3729	D6	3747	C5	3763	F5	3781	B3	3805	F4	3822	D6	3849	C6	3865	C6	3881	D3	6804	A2	7813	A2
2708	F3	2820	E4	2850	E3	2881	A5	3713	F3	3730	F2	3748	C5	3764	E6	3782	B3	3806	F4	3823	D6	3850	D6	3866	D4	3882	D3	6805	A2	7814	B2
2709	F2	2821	F2	2852	C4	2882	B5	3715	C6	3731	G2	3750	C5	3765	E5	3783	A7	3807	F1	3829	D2	3851	F1	3867	E3	3883	C3	6806	A2	7816	E5
2710	F3	2822	F4	2853	D3	2885	F6	3716	C6	3733	B7	3751	C5	3766	F3	3784	B2	3808	F4	3830	E2	3852	D6	3868	E3	3884	G7	6807	B1	7818	F3
2711	F2	2828	F2	2854	D3	2887	F6	3717	D6	3735	B7	3752	C4	3768	F3	3786	B1	3809	F1	3831	F2	3853	F2	3869	C3	3885	C3	6808	A1	7819	G2
2712	B3	2829	F3	2855	C2	2888	F5	3718	B6	3736	C6	3753	A6	3770	G3	3787	B3	3810	F4	3833	F4	3854	B6	3870	C4	3886	C4	6809	A1	7820	G3
2713	F3	2831	D5	2856	C3	2889	E6	3719	E5	3737	B5	3754	B6	3771	B3	3788	B2	3811	D2	3835	F2	3855	F2	3871	C2	3889	C3	6810	A1		
2810	E4	2832	E2	2859	D3	2890	E5	3720	E5	3738	C5	3755	F6	3772	B2	3789	B2	3812	D2	3836	F1	3856	F2	3872	C4	3890	G6	6811	C2		
2811	F1	2833	D5	2861	G7	2892	E5	3722	F2	3740	C5	3756	F6	3773	A4	3790	B3	3813	F4	3840	D6	3857	D6	3874	D3	3891	C3	6812	C1		
2812	F4	2834	D1	2862	C3	2893	E7	3723	A6	3741	C5	3757	F6	3774	B3	3791	B3	3814	E5	3841	C4	3858	D6	3875	E3	3892	F7	7800	D4		
2813	E4	2836	E2	2865	C3	2894	E5	3724	A6	3742	C5	3758	E5	3775	B3	3793	G3	3816	E5	3844	C5	3859	E2	3876	C3	3893	E3	7801	E2		



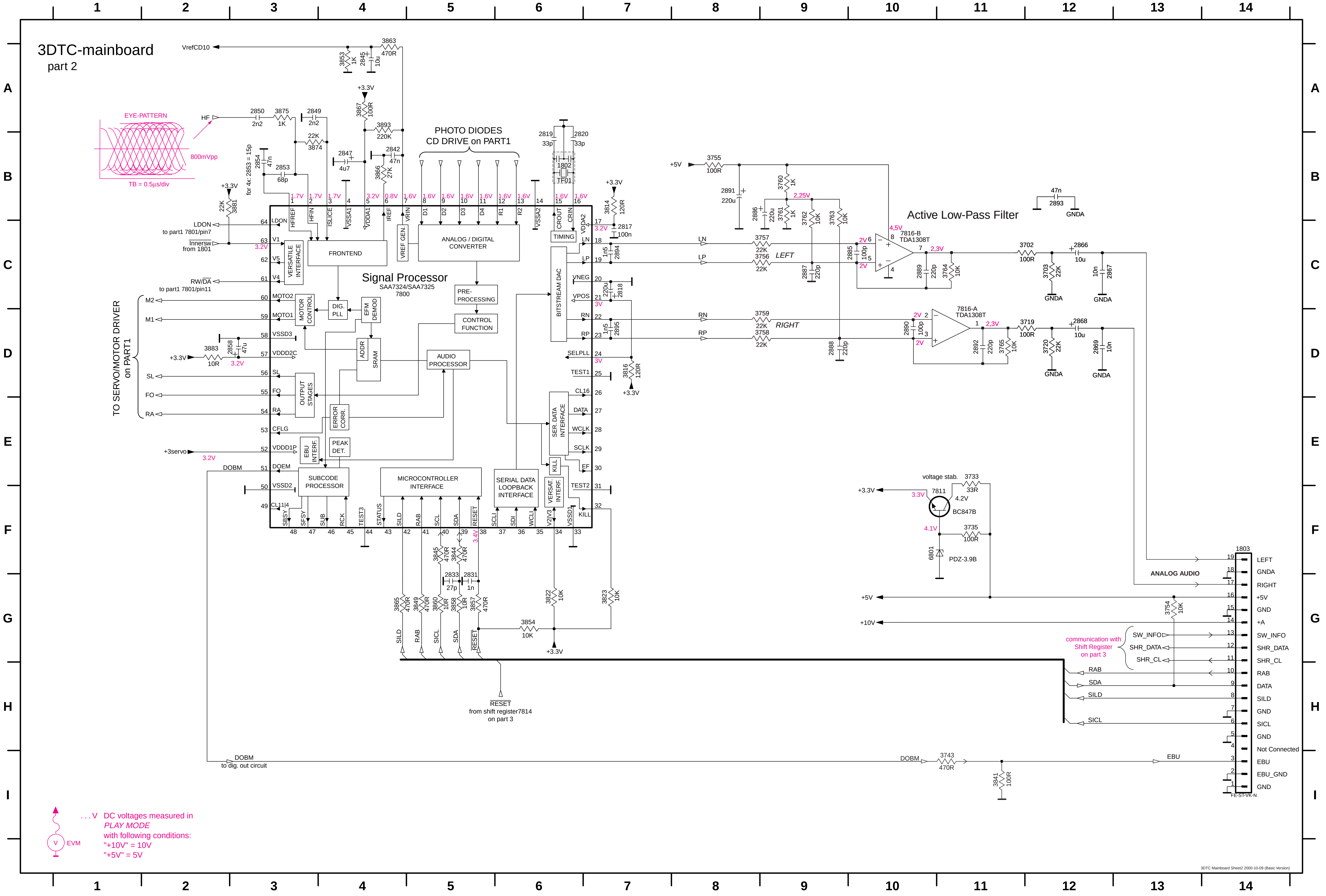
Mainboard Copperside view

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

3DTC, Mainboard Layout stage .4 2001-02-07

1802	B6
1803	F14
2817	C7
2818	C7
2819	B6
2820	B6
2831	G5
2833	G5
2842	B4
2845	A4
2847	B4
2849	A3
2850	A3
2853	B3
2854	B3
2858	D3
2866	C12
2867	C12
2868	D12
2869	D12
2885	C10
2886	B9
2887	C9
2888	D9
2889	C10
2890	D10
2891	B8
2892	D11
2893	B12
2894	C7
2895	D7
3702	C12
3703	C12
3719	D12
3720	D12
3733	F11
3735	F11
3743	I11
3754	G13
3755	B8
3756	C9
3757	C9
3758	D9
3759	D9
3760	B9
3761	B9
3762	B9
3763	B9
3764	C11
3765	D11
3814	B7
3816	D7
3822	G6
3823	G7
3841	I11
3844	F5
3845	F5
3849	G5
3853	A4
3854	G6
3857	G5
3858	G5
3860	G5
3863	A4
3865	G4
3866	B4
3867	A4
3874	B3
3875	A3
3881	B3
3883	D2
3893	A4
6801	F10
7800	C4
7811	F10
7816-A	D11
7816-B	C10

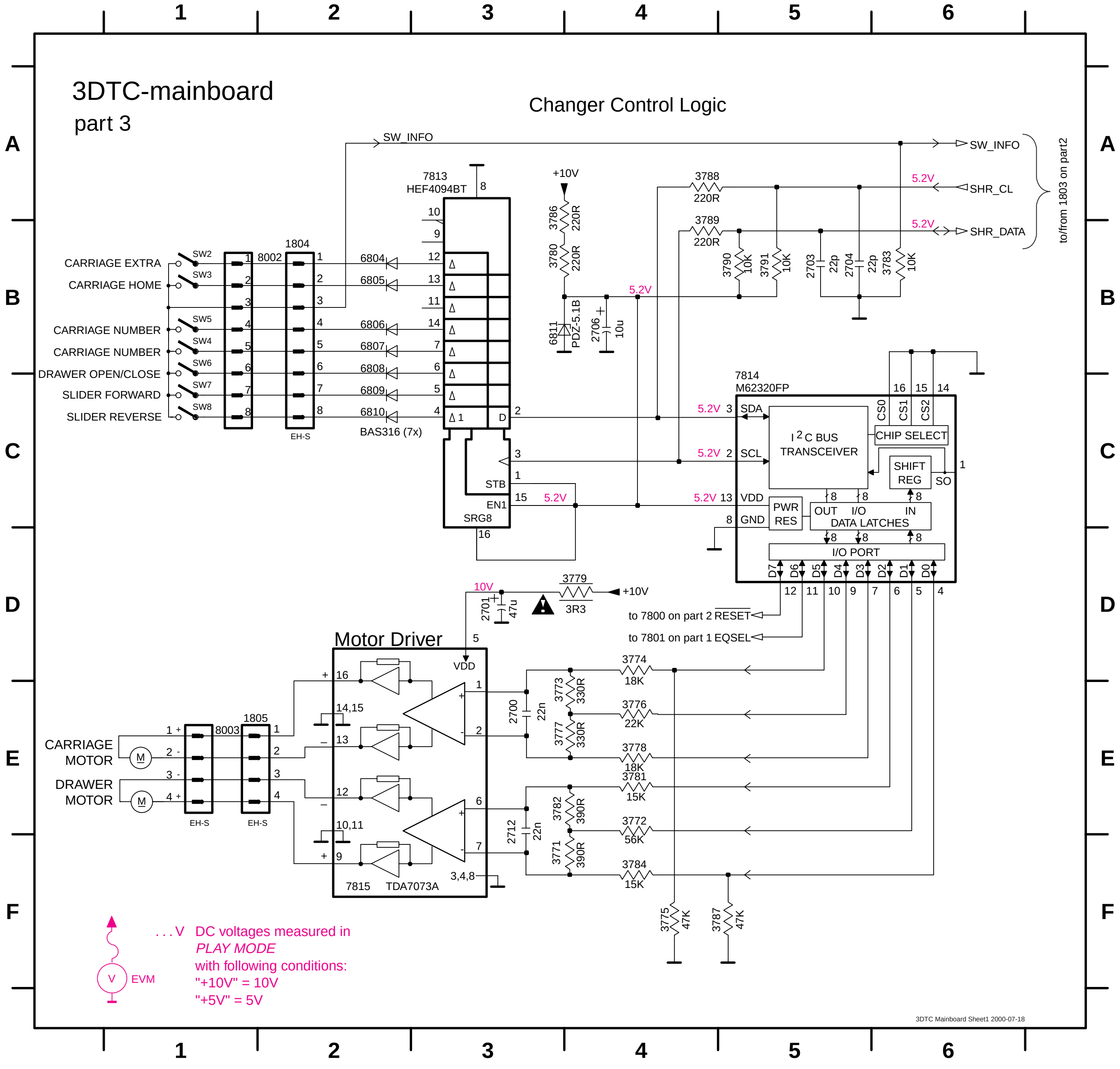
3DTC-mainboard
part 2


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
VrefCD10
3863 470R
3853 1K
2845 10u
+3.3V
3867 100R
3893 220K
EYE-PATTERN
HF
2850 2n2
3875 1K
2849 2n2
22K 3874
800mVpp
TB = 0.5µs/div
2854 47n
for 4x: 2853 = 15p
2853 68p
2847 4u7
2842 47n
3866 27K
PHOTO DIODES
CD DRIVE on PART1
2819 33p
2820 33p
1802 TF01
+3.3V
3881 22K
LDON
to part1 7801/pin7
Innersw
from 1801
RW/DA
to part1 7801/pin11
TO SERVO/MOTOR DRIVER
on PART1
M2
M1
+3.3V
3883 10R
2858 47u
SL
FO
RA
+3servo
DOBM
HFREF
HFIN
ISLICE
VSSA1
VDDA1
IREF
VRIN
D1
D2
D3
D4
R1
R2
VSSA2
CROUT
CRIN
VDDA2
VERSATILE INTERFACE
FRONTEND
VREF GEN.
ANALOG / DIGITAL CONVERTER
TIMING
Signal Processor
SAA7324/SAA7325
7800
PRE-PROCESSING
CONTROL FUNCTION
MOTOR CONTROL
DIG. PLL
EFM DEMOD
ADDR
SRAM
AUDIO PROCESSOR
OUTPUT STAGES
ERROR CORR.
EBU INTERF.
PEAK DET.
SUBCODE PROCESSOR
MICROCONTROLLER INTERFACE
SERIAL DATA LOOPBACK INTERFACE
VERSAT. INTERF.
BITSTREAM DAC
SER. DATA INTERFACE
KILL
LDON
V1
V5
V4
MOTO2
MOTO1
VSSD3
VDDD2C
SL
FO
RA
CFLG
VDDD1P
DOEM
VSSD2
CL11|4
SBSY
SFSY
SUB
RCK
TEST3
STATUS
SILD
RAB
SCL
SDA
RESET
SCLI
SDI
WCLI
V2|V3
VSSD1
KILL
LN
LP
VNEG
VPOS
RN
RP
SELPLL
TEST1
CL16
DATA
WCLK
SCLK
EF
TEST2
1.7V
3.2V
0.8V
1.6V
3V
3.4V
3814 120R
2817 100n
2894 1n5
2818 220u
2895 1n5
3816 120R
+3.3V
3845 470R
3844 470R
2833 27p
2831 1n
3865 470R
3849 470R
3860 10R
3858 10R
3857 470R
3854 10K
3822 10K
3823 10K
+3.3V
RESET
from shift register7814
on part 3
DOBM
to dig. out circuit
+5V
3755 100R
2891 220u
3760 1K
2886 220u
3761 1K
2,25V
3762 10K
3763 10K
Active Low-Pass Filter
47n
2893
GNDA
LN
LP
3757 22K
3756 22K
LEFT
2887 220p
2885 100p
4,5V
7816-B
TDA1308T
2V
2,3V
2889 220p
3764 10K
3702 100R
2866 10u
3703 22K
2867 10n
GNDA
RN
RP
3759 22K
3758 22K
RIGHT
2888 220p
2890 100p
7816-A
TDA1308T
2892 220p
3765 10K
3719 100R
2868 10u
3720 22K
2869 10n
voltage stab.
3733 33R
+3.3V
7811
BC847B
4.2V
4.1V
3735 100R
6801
PDZ-3.9B
1803
LEFT
GNDA
RIGHT
+5V
GND
+A
SW_INFO
SHR_DATA
SHR_CL
RAB
DATA
SILD
GND
SICL
GND
Not Connected
EBU
EBU_GND
GND
FE-ST-VK-N
ANALOG AUDIO
+5V
+10V
3754 10K
communication with
Shift Register
on part 3
SW_INFO
SHR_DATA
SHR_CL
RAB
SDA
SILD
SICL
DOBM
3743 470R
EBU
3841 100R
EVM
...V DC voltages measured in
PLAY MODE
with following conditions:
"+10V" = 10V
"+5V" = 5V

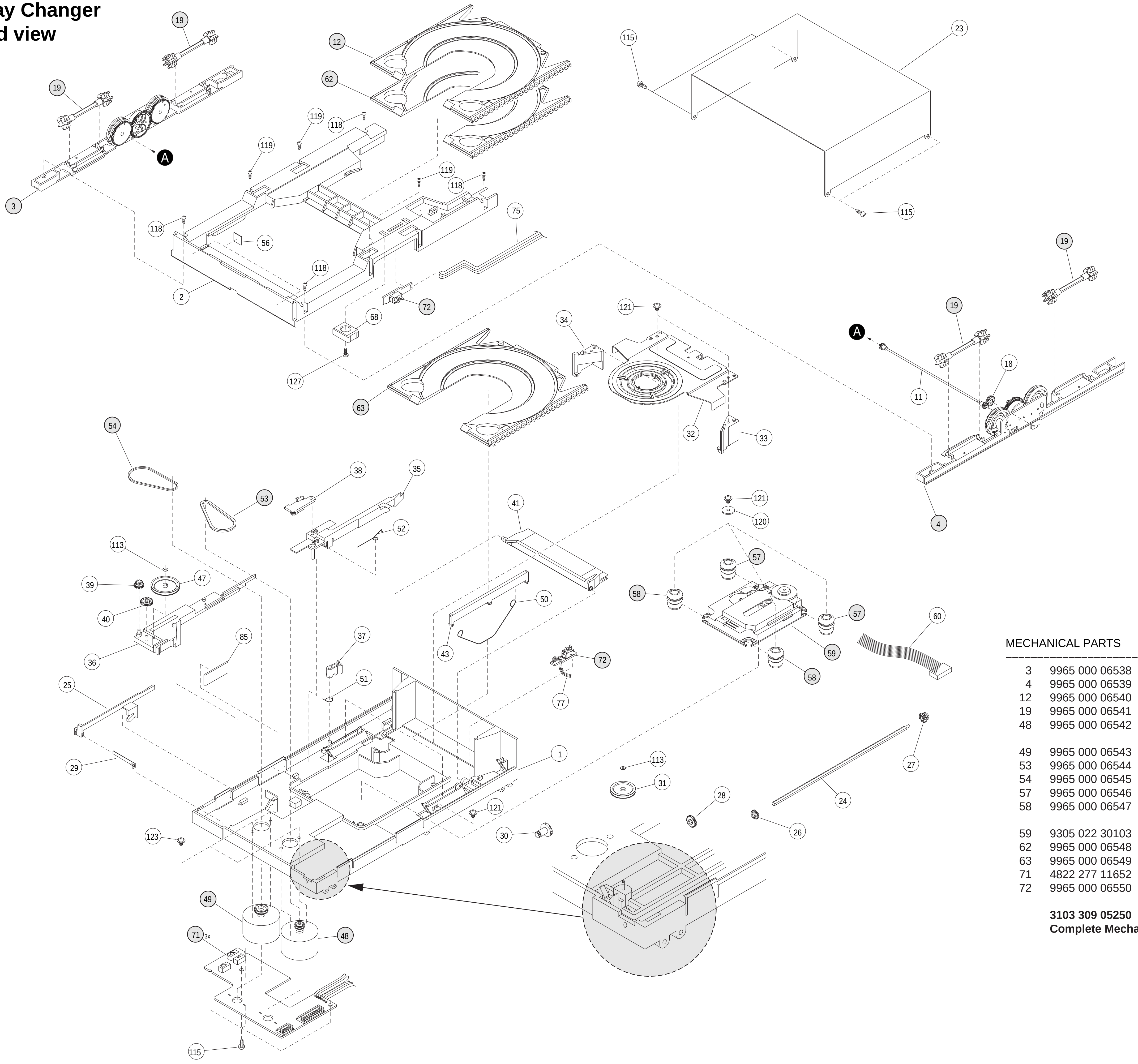
3DTC Mainboard Sheet2 2000-10-09 (Basic Version)

Technical remarks

1804	B2	2703	B5	3771	F4	3775	F4	3779	D4	3783	B6	3788	A4	6804	B2	6808	B2	7813	A3
1805	E1	2704	B5	3772	E4	3776	E4	3780	B3	3784	F4	3789	B4	6805	B2	6809	C2	7814	C5
2700	E3	2706	B4	3773	E4	3777	E4	3781	E4	3786	B3	3790	B5	6806	B2	6810	C2	7815	F2
2701	D3	2712	E3	3774	D4	3778	E4	3782	E4	3787	F5	3791	B5	6807	B2	6811	B3		


1 2 3 4 5 6
A B C D E F
3DTC-mainboard
part 3
Changer Control Logic
SW_INFO
SHR_CL
SHR_DATA
to/from 1803 on part2
5.2V
+10V
7813
HEF4094BT
7814
M62320FP
I2C BUS TRANSCEIVER
CHIP SELECT
SHIFT REG
PWR RES
OUT I/O IN
DATA LATCHES
I/O PORT
SDA SCL VDD GND
CS0 CS1 CS2
D7 D6 D5 D4 D3 D2 D1 D0
STB EN1 SRG8
CARRIAGE EXTRA
CARRIAGE HOME
CARRIAGE NUMBER
CARRIAGE NUMBER
DRAWER OPEN/CLOSE
SLIDER FORWARD
SLIDER REVERSE
SW2 SW3 SW5 SW4 SW6 SW7 SW8
8002
1804
EH-S
6804 6805 6806 6807 6808 6809 6810
BAS316 (7x)
3786 220R
3780 220R
6811 PDZ-5.1B
2706 10u
3788 220R
3789 220R
3790 10K
3791 10K
2703 22p
2704 22p
3783 10K
10V
2701 47u
3779 3R3
to 7800 on part 2 RESET
to 7801 on part 1 EQSEL
Motor Driver
VDD
7815 TDA7073A
CARRIAGE MOTOR
DRAWER MOTOR
8003
1805
2700 22n
2712 22n
3773 330R
3777 330R
3774 18K
3776 22K
3778 18K
3781 15K
3782 390R
3771 390R
3772 56K
3784 15K
3775 47K
3787 47K
EVM
...V DC voltages measured in
PLAY MODE
with following conditions:
"+10V" = 10V
"+5V" = 5V
3DTC Mainboard Sheet1 2000-07-18

3Disc Tray Changer Exploded view


19
19
12
62
119
118
119
A
3
118
56
118
2
119
118
75
72
68
127
63
34
121
32
33
115
23
115
19
19
A
18
11
4
54
53
38
35
52
41
121
120
57
58
57
59
58
60
113
39
47
40
36
85
37
51
50
43
72
77
25
29
1
113
31
27
24
28
26
121
30
123
49
71 3x
48
115

MECHANICAL PARTS

3	9965 000 06538	ASSY HOLDER LEFT
4	9965 000 06539	ASSY HOLDER RIGHT
12	9965 000 06540	ASSY CARRIAGE 1 (TOP)
19	9965 000 06541	ASSY GEAR STAR
48	9965 000 06542	ASSY MOTOR CARRIAGE
49	9965 000 06543	ASSY MOTOR DRAWER
53	9965 000 06544	BELT DRAWER
54	9965 000 06545	BELT CARRIAGE
57	9965 000 06546	DAMPER RUBBER REAR
58	9965 000 06547	DAMPER RUBBER FRONT
59	9305 022 30103	CD DRIVE VAM2201/03
62	9965 000 06548	ASSY CARRIAGE 2 (MIDDLE)
63	9965 000 06549	ASSY CARRIAGE 3 (BOTTOM)
71	4822 277 11652	SWITCH (SW6-SW8)
72	9965 000 06550	SWITCH (SW2-SW5)

3103 309 05250 3DTC CMCJ-01-13 (1xSPEED)
Complete Mechanic - CD Drive already included

Exploded view 3DTC 2000 08 22

MISCELLANEOUS

1800	4822 265 10925	FLEX FOIL CONNECTOR 15PIN
1803	4822 265 11545	FLEX FOIL CONNECTOR 19PIN
8003	3103 308 92560	FLEX FOIL CABLE 15P, 80mm
59	9305 022 30103	CD DRIVE VAM2201/03

CAPACITORS

2504	4822 124 40248	10µF	20%	63V
2506	4822 124 40433	47µF	20%	25V
2507	4822 124 40248	10µF	20%	63V
2508	4822 124 40248	10µF	20%	63V
2510	4822 124 40248	10µF	20%	63V
2513	4822 124 40248	10µF	20%	63V
2530	4822 124 40433	47µF	20%	25V
2532	4822 124 40433	47µF	20%	25V
2700 ©	4822 126 14494	22nF	10%	25V
2701	4822 124 40433	47µF	20%	25V
2703 ©	5322 122 32658	22pF	5%	50V
2704 ©	4822 122 33761	22pF	5%	50V
2706	4822 124 22833	10µF	20%	50V
2712 ©	4822 126 14494	22nF	10%	25V
2810 ©	4822 126 13883	220pF	5%	50V
2811 ©	4822 126 14241	330pF		50V
2812 ©	4822 126 13883	220pF	5%	50V
2813 ©	4822 126 13883	220pF	5%	50V
2814 ©	4822 126 13881	470pF	5%	50V
2815 ©	4822 126 14508	180pF	5%	50V
2816 ©	4822 126 13883	220pF	5%	50V
2817 ©	4822 126 14585	100nF	10%	50V
2818	4822 124 42383	220µF	20%	4V
2819 ©	5322 122 32659	33pF	5%	50V
2820 ©	5322 122 32659	33pF	5%	50V
2821 ©	4822 126 14508	180pF	5%	50V
2822 ©	4822 126 13883	220pF	5%	50V
2828 ©	4822 126 14508	180pF	5%	50V
2829 ©	4822 126 13883	220pF	5%	50V
2830	4822 124 40769	4,7µF	20%	100V
2831 ©	5322 126 11578	1nF	10%	63V
2832 ©	4822 126 13879	220nF	20%	16V
2833 ©	4822 126 11669	27pF	10%	50V
2834 ©	4822 126 13751	47nF	10%	50V
2836 ©	4822 126 13193	4,7nF	10%	63V
2839	4822 124 40769	4,7µF	20%	100V
2842 ©	4822 126 13751	47nF	10%	50V
2843	4822 124 40769	4,7µF	20%	100V
2845	4822 124 40248	10µF	20%	63V
2846 ©	4822 126 14238	2,2nF	10%	50V
2847	4822 124 40769	4,7µF	20%	100V
2848 ©	4822 126 14506	270pF	5%	50V
2849 ©	4822 122 33177	10nF	20%	50V
2850 ©	2238 786 11554	2,2nF	5%	16V
2851	4822 124 40433	47µF	20%	25V
2852 ©	3198 024 44730	47nF	5%	50V
2853 ©	4822 126 13694	68pF	1%	63V
2854 ©	4822 126 13751	47nF	10%	50V
2855 ©	4822 126 14247	1,5nF	10%	50V
2856 ©	4822 122 33216	270pF	5%	50V
2858	4822 124 12362	47µF	20%	4V
2859 ©	4822 122 33177	10nF	20%	50V
2860	4822 124 12362	47µF	20%	4V
2861 ©	4822 126 14585	100nF	10%	50V
2862 ©	5322 126 11583	10nF	10%	63V
2863	4822 124 40433	47µF	20%	25V
2864	5322 124 41948	0,47µF	20%	50V

CAPACITORS

2865 ©	3198 024 44730	47nF	5%	50V
2866	3198 028 41090	10µF	20%	35V
2867 ©	4822 122 33177	10nF	20%	50V
2868	3198 028 41090	10µF	20%	35V
2869 ©	4822 122 33177	10nF	20%	50V
2885 ©	4822 122 31765	100pF	5%	50V
2886	4822 124 42383	220µF	20%	4V
2887 ©	4822 126 13883	220pF	5%	50V
2888 ©	4822 126 13883	220pF	5%	50V
2889 ©	4822 126 13883	220pF	5%	50V
2890 ©	4822 122 31765	100pF	5%	50V
2891	4822 124 42383	220µF	20%	4V
2892 ©	4822 126 13883	220pF	5%	50V
2893 ©	4822 126 13751	47nF	10%	50V
2894 ©	4822 126 13344	1,5nF	5%	63V
2895 ©	4822 126 13344	1,5nF	5%	63V

RESISTORS

3502 ©	4822 051 20102	1kΩ	5%	0,1W
3505 ©	4822 051 20223	22kΩ	5%	0,1W
3512 ©	4822 117 10833	10kΩ	1%	0,1W
3515 ©	4822 117 10833	10kΩ	1%	0,1W
3517 ©	4822 117 10833	10kΩ	1%	0,1W
3534 ©	4822 117 12955	2,7kΩ	1%	0,1W
3535 ©	4822 051 20472	4,7kΩ	5%	0,1W
3536 ©	4822 117 12955	2,7kΩ	1%	0,1W
3537 ©	4822 051 20472	4,7kΩ	5%	0,1W
3702 ©	4822 051 30101	100Ω	5%	0,06W
3703 ©	4822 051 30223	22kΩ	5%	0,06W
3719 ©	4822 051 30101	100Ω	5%	0,06W
3720 ©	4822 051 30223	22kΩ	5%	0,06W
3733 ©	4822 051 30339	33Ω	5%	0,06W
3735 ©	4822 051 30101	100Ω	5%	0,06W
3743 ©	4822 051 30471	470Ω	5%	0,06W
3754 ©	4822 051 30103	10kΩ	5%	0,06W
3755 ©	4822 051 30101	100Ω	5%	0,06W
3756 ©	4822 051 30223	22kΩ	5%	0,06W
3757 ©	4822 051 30223	22kΩ	5%	0,06W
3758 ©	4822 051 30223	22kΩ	5%	0,06W
3759 ©	4822 051 20223	22kΩ	5%	0,1W
3760 ©	4822 051 10102	1kΩ	2%	0,25W
3761 ©	4822 051 10102	1kΩ	2%	0,25W
3762 ©	4822 117 10833	10kΩ	1%	0,1W
3763 ©	4822 117 10833	10kΩ	1%	0,1W
3764 ©	4822 051 30103	10kΩ	5%	0,06W
3765 ©	4822 051 30103	10kΩ	5%	0,06W
3771 ©	4822 051 30391	390Ω	5%	0,062W
3772 ©	4822 051 30563	56kΩ	5%	0,06W
3773 ©	4822 051 30331	330Ω	5%	0,06W
3774 ©	4822 051 30183	18kΩ	5%	0,06W
3775 ©	4822 117 12925	47kΩ	1%	0,06W
3776 ©	4822 051 30223	22kΩ	5%	0,06W
3777 ©	4822 051 30331	330Ω	5%	0,06W
3778 ©	4822 051 30183	18kΩ	5%	0,06W
3779 ▲	4822 052 10338	3,3Ω		NFR25
3780 ©	4822 117 11503	220Ω	5%	0,1W
3781 ©	4822 051 30153	15kΩ	5%	0,06W
3782 ©	4822 051 30391	390Ω	5%	0,062W
3783 ©	4822 051 30103	10kΩ	5%	0,06W
3784 ©	4822 051 30153	15kΩ	5%	0,06W
3786 ©	4822 051 30221	220Ω	5%	0,06W
3787 ©	4822 117 10834	47kΩ	1%	0,1W
3788 ©	4822 051 30221	220Ω	5%	0,06W

RESISTORS

3789 ©	4822 051 30221	220Ω	5%	0,06W
3790 ©	4822 051 30103	10kΩ	5%	0,06W
3791 ©	4822 051 30103	10kΩ	5%	0,06W
3805	4822 111 50499	3,3MΩ	5%	0,2W
3806	4822 111 50499	3,3MΩ	5%	0,2W
3807 ©	4822 051 30223	22kΩ	5%	0,06W
3808 ©	4822 051 30103	10kΩ	5%	0,06W
3809 ©	4822 051 30223	22kΩ	5%	0,06W
3810 ©	4822 051 30103	10kΩ	5%	0,06W
3813 ©	4822 051 30103	10kΩ	5%	0,06W
3814 ©	4822 051 20121	120Ω	5%	0,1W
3816 ©	4822 051 30121	120Ω	5%	0,06W
3817 ©	4822 051 20273	27kΩ	5%	0,1W
3818 ©	4822 051 30103	10kΩ	5%	0,06W
3820 ©	4822 117 11148	56kΩ	1%	0,1W
3821 ©	4822 051 30103	10kΩ	5%	0,06W
3822 ©	4822 051 30103	10kΩ	5%	0,06W
3823 ©	4822 051 30103	10kΩ	5%	0,06W
3829 ©	4822 051 30689	68Ω	5%	0,06W
3830 ©	4822 051 30689	68Ω	5%	0,06W
3831 ©	4822 051 30563	56kΩ	5%	0,06W
3833 ©	4822 051 30103	10kΩ	5%	0,06W
3835 ©	4822 051 30472	4,7kΩ	5%	0,06W
3836 ©	4822 051 20472	4,7kΩ	5%	0,1W
3841 ©	4822 051 30101	100Ω	5%	0,06W
3844 ©	4822 051 30471	470Ω	5%	0,06W
3845 ©	4822 051 30471	470Ω	5%	0,06W
3846 ©	4822 051 30472	4,7kΩ	5%	0,06W
3849 ©	4822 051 20471	470Ω	5%	0,1W
3851 ©	4822 117 12955	2,7kΩ	1%	0,1W
3853 ©	4822 051 30102	1kΩ	5%	0,06W
3854 ©	4822 051 30103	10kΩ	5%	0,06W
3855 ©	4822 051 10102	1kΩ	2%	0,25W
3856 ©	4822 051 30103	10kΩ	5%	0,06W
3857 ©	4822 051 30471	470Ω	5%	0,06W
3858 ©	4822 051 30109	10Ω	5%	0,06W
3859 ©	4822 117 13608	4,7Ω	5%	0,06W
3860 ©	4822 051 20109	10Ω	5%	0,1W
3861 ©	4822 051 30101	100Ω	5%	0,06W
3862 ▲	4822 052 10478	4,7Ω	5%	NFR
3863 ©	4822 051 20471	470Ω	5%	0,1W
3864 ©	4822 051 20101	100Ω	5%	0,1W
3865 ©	4822 051 20471	470Ω	5%	0,1W
3866 ©	4822 051 20273	27kΩ	5%	0,1W
3867 ©	4822 051 20101	100Ω	5%	0,1W
3869 ©	4822 051 30333	33kΩ	5%	0,06W
3870 ©	4822 117 12925	47kΩ	1%	0,06W
3871 ©	4822 051 30472	4,7kΩ	5%	0,06W
3872 ©	4822 051 30102	1kΩ	5%	0,06W
3873 ▲	4822 052 10228	2,2Ω	5%	0,33W
3874 ©	4822 051 30223	22kΩ	5%	0,06W
3875 ©	4822 117 11817	1,2kΩ	1%	0,06W
3876 ©	4822 051 30102	1kΩ	5%	0,06W
3877 ©	4822 051 30333	33kΩ	5%	0,06W
3878 ©	4822 117 12925	47kΩ	1%	0,06W
3879 ©	4822 051 30682	6,8kΩ	5%	0,06W
3881 ©	4822 051 20223	22kΩ	5%	0,1W
3882 ©	4822 117 10837	100kΩ	1%	0,1W
3883 ©	4822 051 30109	10Ω	5%	0,06W
3884 ©	4822 051 30472	4,7kΩ	5%	0,06W
3885 ©	4822 117 13632	100kΩ	1%	0,06W
3886 ©	4822 051 30339	33Ω	5%	0,06W
3887	4822 053 10228	2,2Ω	5%	1W
3888 ▲	4822 052 10228	2,2Ω	5%	0,33W

RESISTORS

3890 ©	4822 051 30472	4,7kΩ	5%	0,06W
3891 ©	4822 117 13632	100kΩ	1%	0,06W
3892 ©	4822 117 11149	82kΩ	1%	0,1W
3893 ©	4822 117 13579	220kΩ	1%	0.1W
3899	4822 116 81154	2,2Ω	5%	0,5W

COILS

1802	2422 543 01068	RESONATOR 8MHZ

DIODES

6801 ©	9322 129 34685	BZX284-C3V9
6804 ©	4822 130 11397	BAS316
6805 ©	4822 130 11397	BAS316
6806 ©	4822 130 11397	BAS316
6807 ©	4822 130 11397	BAS316
6808 ©	4822 130 11397	BAS316
6809 ©	4822 130 11397	BAS316
6810 ©	4822 130 11397	BAS316
6811 ©	9340 548 52115	BZX284-C5V1
6812 ©	9340 548 47115	PDZ3.3B

TRANSISTORS

7811 ©	5322 130 60159	BC846B

INTEGRATED CIRCUITS

7800 ©	9352 642 17557	SAA7325H/M2B CD10/M2
7801 ©	9352 622 36118	TZA1025T/V2 HF-Amplifier
7802	4822 209 32852	TDA7073A/N2
7803	4822 209 32852	TDA7073A/N2
7813	5322 209 11306	HEF4094BT
7814 ©	4822 209 17345	M62320FP, I2C SHIFT REGISTER
7815	4822 209 32852	TDA7073A/N2
7816 ©	4822 209 33165	TDA1308T/N1

MAINS BOARD

TABLE OF CONTENTS

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Mains part - Copper side view 11-3
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Electrical parts list 11-5

Brief introduction of the Mains Board

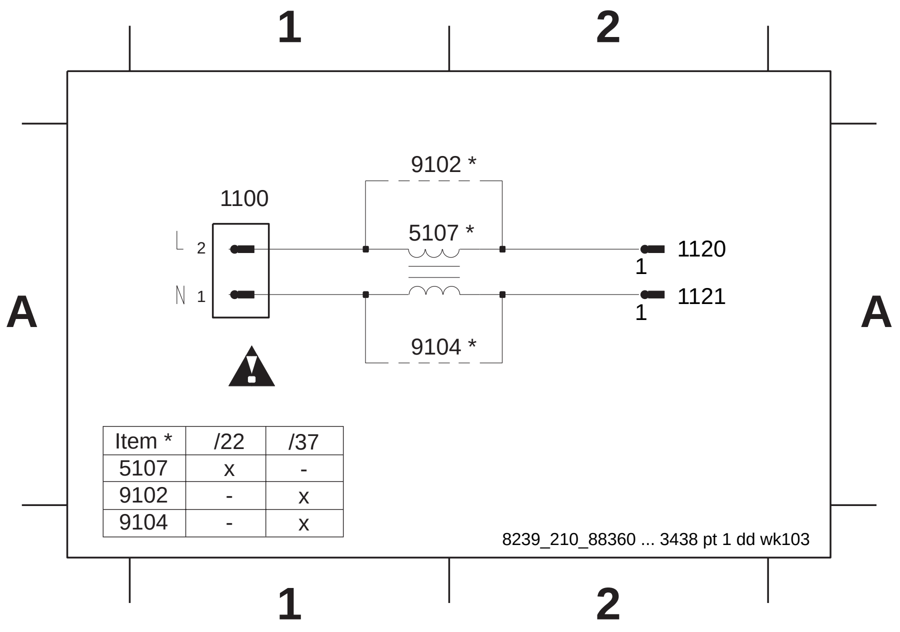
ECO Power
Standby Transformer 5100 provides the LPS supply to control the relay 1102, cutting of the Mains supply to the Mains transformer during the ECO Power (standby) mode.

The Mains transformer provides the following:

- AC supply (across F1 & F2) and -Vkk supply for the FTD display
- +A and +A/2 to the Main amplifier area and Regulator board

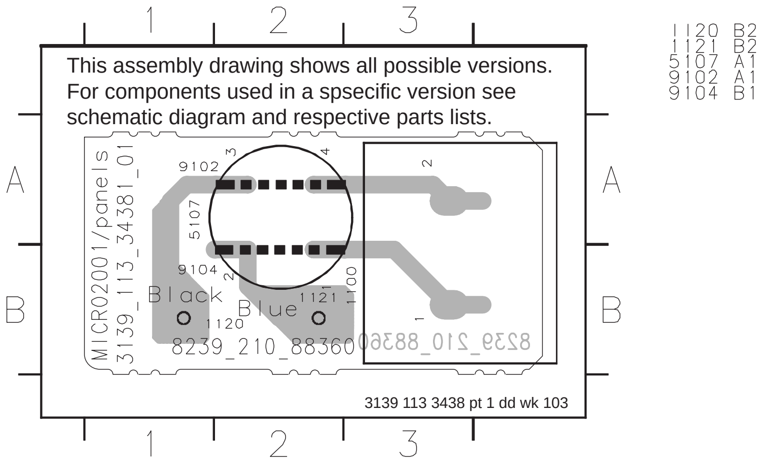
SOCKET PART - CIRCUIT DIAGRAM & COMPONENT LAYOUT

1100	**A1**	**1121**	**A2**	**9102**	**A1**	**T341**	**A1**
1120	**A2**	**5107**	**A1**	**9104**	**A1**	**T342**	**A1**


1
2
9102 *
1100
L 2
N 1
5107 *
1120
1
1121
1
9104 *
A
A
1
2

Item *	/22	/37
5107	x	-
9102	-	x
9104	-	x

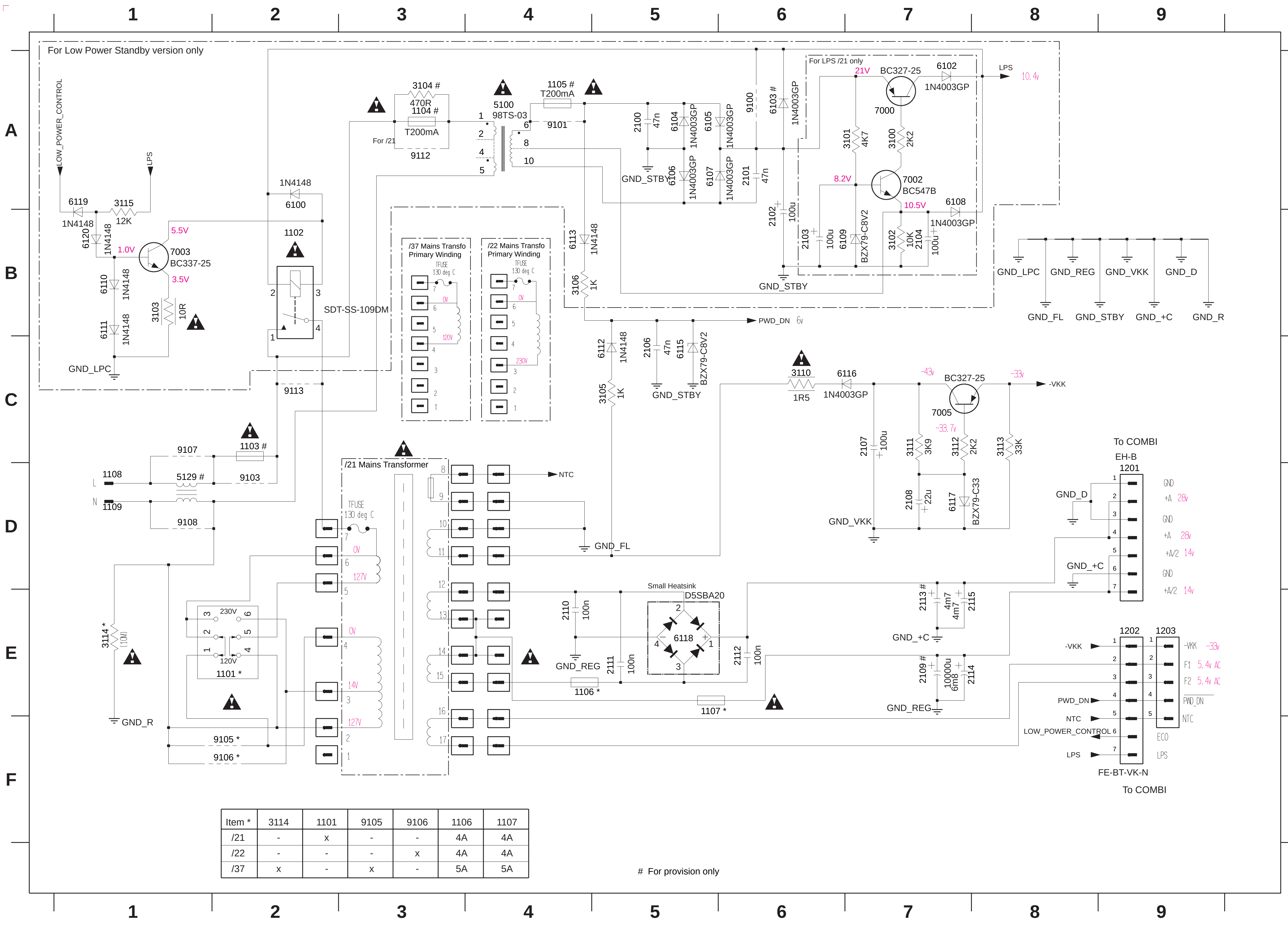
8239_210_88360 ... 3438 pt 1 dd wk103


1
2
3
A
B
A
B
MICRO2001/panels
3139_113_34381_01
9102
5107
9104
Black
Blue
1120
1121
1100
8239_210_88360
1
2
3
1120 B2
1121 B2
5107 A1
9102 A1
9104 B1

This assembly drawing shows all possible versions.
For components used in a spsecific version see schematic diagram and respective parts lists.

3139 113 3438 pt 1 dd wk 103

CIRCUIT DIAGRAM - MAINS PART


For Low Power Standby version only
LOW_POWER_CONTROL
LPS
6119
1N4148
3115
12K
6120
1N4148
5.5V
1.0V
7003
BC337-25
3.5V
6110
1N4148
6111
1N4148
3103
10R
GND_LPC
1N4148
6100
1102
SDT-SS-109DM
9113
3104 #
470R
1104 #
T200mA
For /21
9112
5100
98TS-03
1105 #
T200mA
9101
2100
47n
6104
1N4003GP
6105
1N4003GP
6106
1N4003GP
6107
1N4003GP
9100
2101
47n
GND_STBY
2102
100u
6103 #
1N4003GP
For LPS /21 only
21V
BC327-25
6102
1N4003GP
LPS
10.4v
7000
3101
4K7
3100
2K2
8.2V
7002
BC547B
10.5V
6108
1N4003GP
2103
100u
6109
BZX79-C8V2
3102
10K
2104
100u
GND_LPC
GND_REG
GND_VKK
GND_D
GND_FL
GND_STBY
GND_+C
GND_R
/37 Mains Transfo Primary Winding
/22 Mains Transfo Primary Winding
TFUSE 130 deg C
0V
120V
230V
6113
1N4148
3106
1K
PWD_DN 6v
6112
1N4148
2106
47n
6115
BZX79-C8V2
3105
1K
GND_STBY
3110
1R5
6116
1N4003GP
-43v
BC327-25
-33v
-VKK
7005
-33.7v
2107
100u
3111
3K9
3112
2K2
3113
33K
2108
22u
6117
BZX79-C33
GND_VKK
To COMBI
EH-B
1201
GND
+A 28v
+A/2 14v
GND_D
GND_+C
9107
1103 #
1108
L
N
1109
5129 #
9103
9108
/21 Mains Transformer
TFUSE 130 deg C
0V
127V
14V
NTC
GND_FL
3114 *
10M
1101 *
230V
120V
9105 *
9106 *
GND_R
Small Heatsink
D5SBA20
6118
2110
100n
GND_REG
2111
100n
1106 *
2112
100n
1107 *
2113 #
4m7
4m7
2115
GND_+C
2109 #
10000u
6m8
2114
GND_REG
1202
1203
-VKK
PWD_DN
NTC
LOW_POWER_CONTROL
LPS
F1 5.4v AC
F2 5.4v AC
PWD_DN
NTC
ECO
LPS
FE-BT-VK-N
To COMBI

Item *	3114	1101	9105	9106	1106	1107
/21	-	x	-	-	4A	4A
/22	-	-	-	x	4A	4A
/37	x	-	x	-	5A	5A

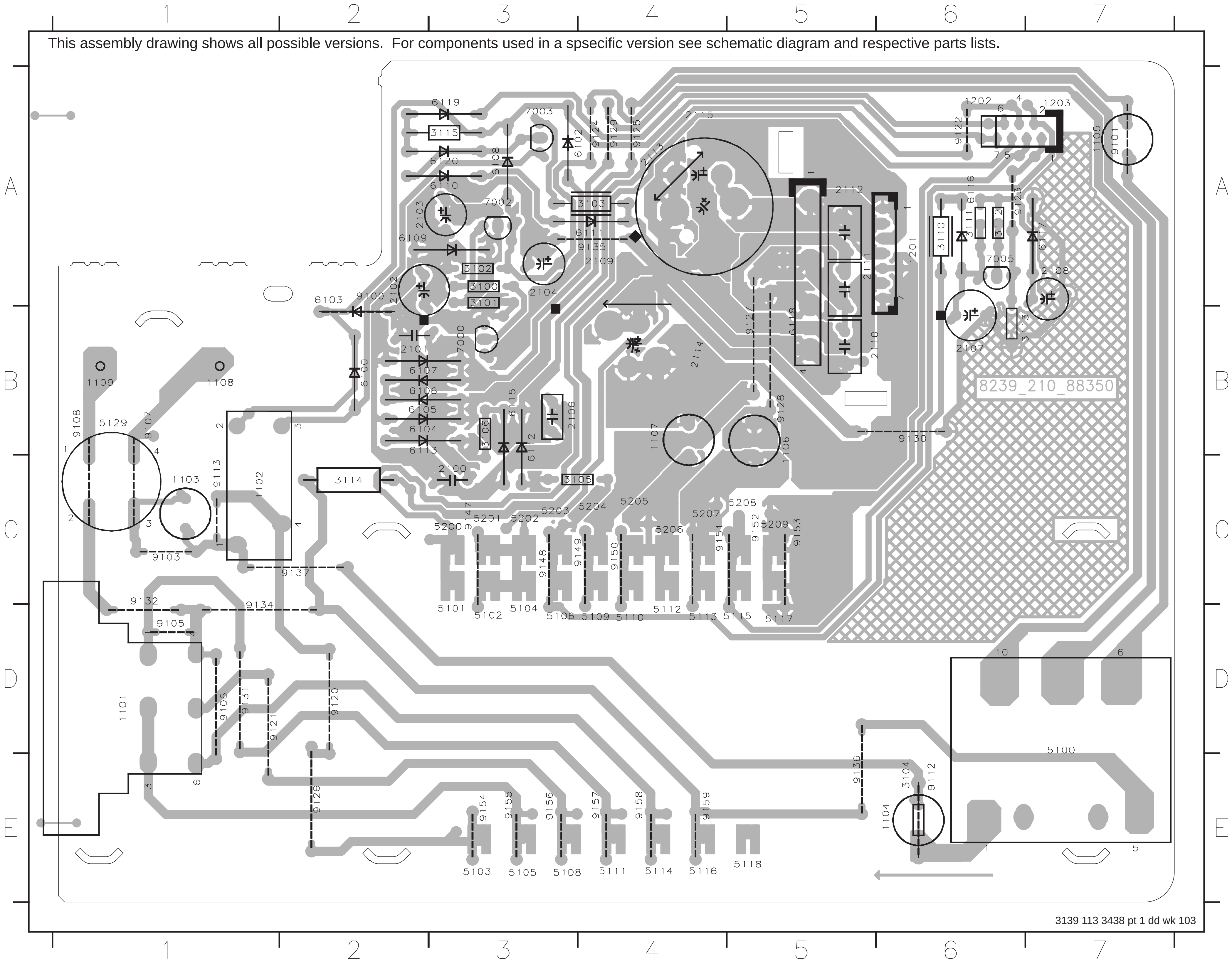
# For provision only

1101	E2
1102	B2
1103	C2
1104	A3
1105	A4
1106	E4
1107	E5
1108	D1
1109	D1
1201	D9
1202	E9
1203	E9
2100	A5
2101	A6
2102	B6
2103	B6
2104	B7
2106	C5
2107	C7
2108	D7
2109	E7
2110	E4
2111	E5
2112	E6
2113	E7
2114	E8
2115	E8
3100	A7
3101	A7
3102	B7
3103	B1
3104	A3
3105	C5
3106	B4
3110	C6
3111	C7
3112	C7
3113	C8
3114	E1
3115	A1
5100	A4
5129	D1
6100	A2
6102	A7
6103	A6
6104	A5
6105	A5
6106	A5
6107	A5
6108	A7
6109	B6
6110	B1
6111	B1
6112	C5
6113	B4
6115	C5
6116	C7
6117	D7
6118	E5
6119	A1
6120	B1
7000	A7
7002	A7
7003	B1
7005	C7
9100	A6
9101	A4
9103	D2
9105	F2
9106	F2
9107	C1
9108	D1
9112	A3
9113	C2

MAINS PART - COPPER SIDE VIEW

1101	D1	1109	B1	2104	A3	2113	A4	3105	C3	5100	D7	5109	D4	5117	D5	5205	C4	6104	B2	6112	B3	7000	B3	9106	D1	9123	A6	9131	D1	9149	C3	9157	E4
1102	C1	1201	A6	2106	B3	2114	B4	3106	B3	5101	D3	5110	D4	5118	E5	5206	C4	6105	B2	6113	B2	7002	A3	9107	B1	9124	A4	9132	C1	9150	C4	9158	E4
1103	C1	1202	A6	2107	B6	2115	A4	3110	A6	5102	D3	5111	E4	5129	B1	5207	C4	6106	B2	6115	B3	7003	A3	9108	B1	9125	A4	9134	D1	9151	C4	9159	E4
1104	E6	1203	A7	2108	A7	3100	A3	3111	A6	5103	E3	5112	D4	5200	C3	5208	C5	6107	B2	6116	A6	7005	A6	9112	E6	9126	E2	9135	A4	9152	C5		
1105	A7	2100	C3	2109	A4	3101	A3	3112	A6	5104	D3	5113	D4	5201	C3	5209	C5	6108	A3	6117	A7	9100	A7	9113	C1	9127	B5	9136	E5	9153	C5		
1106	B5	2101	B2	2110	B5	3102	A3	3113	B6	5105	E3	5114	E4	5202	C3	6100	B2	6109	A2	6118	B5	9101	A7	9120	D2	9128	B5	9137	C2	9154	E3		
1107	B4	2102	A2	2111	A5	3103	A4	3114	C2	5106	D3	5115	D5	5203	C3	6102	A4	6110	A3	6119	A3	9103	C1	9121	D1	9129	A4	9147	C3	9155	E3		
1108	B1	2103	A2	2112	A5	3104	E6	3115	A3	5108	E3	5116	E4	5204	C4	6103	A2	6111	A4	6120	A3	9105	D1	9122	A6	9130	B6	9148	C3	9156	E3		

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.


1
2
3
4
5
6
7
A
B
C
D
E
6119
3115
6120
6110
7003
6102
9124
9129
9125
2115
2113
2112
1202
1203
9122
1105
9101
2103
6109
7002
3103
6111
9135
2109
2104
3102
3100
3101
6103
9100
2102
2101
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9136
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9112
1104
5100
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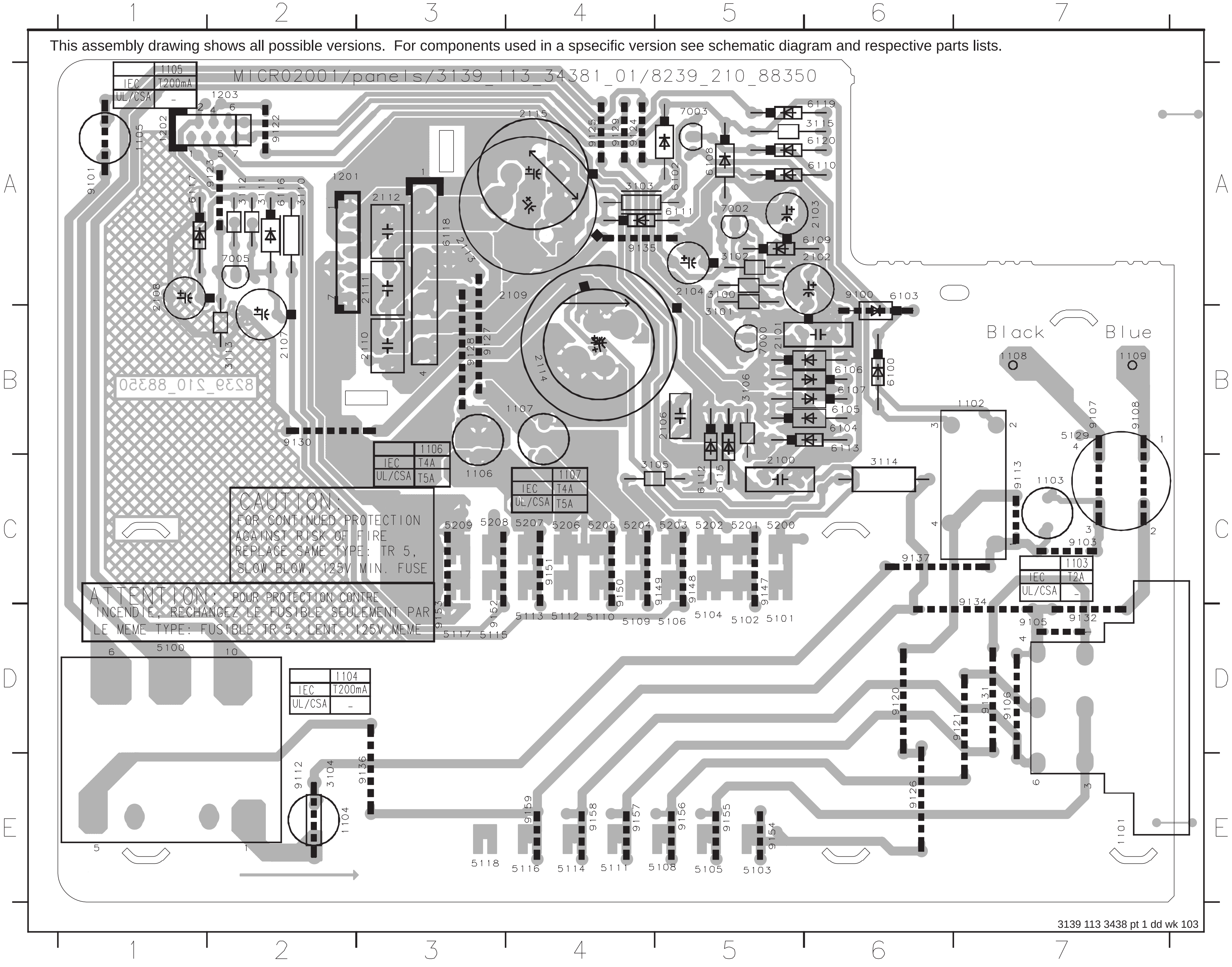
MAINS PART - COMPONENT SIDE VIEW

1101	E7	1109	B7	2104	A5	2113	A3	3105	C4	5100	D1	5109	D4	5117	D3	5205	C4	6104	B6	6112	C5	7000	B5	9106	D7	9123	A2	9131	D7	9149	C5	9157	E4
1102	B7	1201	A2	2106	B5	2114	B4	3106	B5	5101	D5	5110	D4	5118	E3	5206	C4	6105	B6	6113	B6	7002	A5	9107	B7	9124	A4	9132	D7	9150	C4	9158	E4
1103	C7	1202	A1	2107	B2	2115	A4	3110	A2	5102	D5	5111	E4	5129	B7	5207	C4	6106	B6	6115	C5	7003	A5	9108	B7	9125	A4	9134	C7	9151	C4	9159	E4
1104	E2	1203	A2	2108	A1	3100	A5	3111	A2	5103	E5	5112	D4	5200	C5	5208	C3	6107	B6	6116	A2	7005	A2	9112	E2	9126	E6	9135	A4	9152	D3		
1105	A1	2100	C5	2109	A4	3101	B5	3112	A2	5104	D5	5113	D4	5201	C5	5209	C3	6108	A5	6117	A1	9100	A6	9113	C7	9127	B3	9136	E3	9153	D3		
1106	C3	2101	B5	2110	B3	3102	A5	3113	B2	5105	E5	5114	E4	5202	C5	6100	B6	6109	A6	6118	A3	9101	A1	9120	D6	9128	B3	9137	C6	9154	E5		
1107	B4	2102	A6	2111	A3	3103	A4	3114	C6	5106	D5	5115	D3	5203	C5	6102	A5	6110	A6	6119	A6	9103	C7	9121	D7	9129	A4	9147	C5	9155	E5		
1108	B7	2103	A6	2112	A3	3104	E2	3115	A6	5108	E5	5116	E4	5204	C4	6103	A6	6111	A5	6120	A6	9105	D7	9122	A2	9130	B2	9148	C5	9156	E5		

This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.


1
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A
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C
D
E
MICRO2001/panels/3139_113_34381_01/8239_210_88350
8239_210_88350
1105 IEC T200mA UL/CSA -
1106 IEC T4A UL/CSA T5A
1107 IEC T4A UL/CSA T5A
1104 IEC T200mA UL/CSA -
1103 IEC T2A UL/CSA -
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE REPLACE SAME TYPE: TR 5, SLOW BLOW, 125V MIN. FUSE
ATTENTION: POUR PROTECTION CONTRE INCENDIE, RECHANGEZ LE FUSIBLE SEULEMENT PAR LE MEME TYPE: FUSIBLE TR 5, LENT, 125V MEME
Black
Blue
1108
1109
1101
1102
5100
5118
5116
5114
5111
5108
5105
5103
2115
2114
2109
7003
7002
7005
7000
9130
9137
9134

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ELECTRICAL PARTS LIST - MAINS BOARD

MISCELLANEOUS

1100	4822 265 31015	⚠	Mains Socket /22
1100	2422 030 00328	⚠	Mains Socket /37
1102	4822 280 10382	⚠	Relay 1P 9V
1106	4822 071 54002	⚠	Fuse T4A 250V /22
1106	4822 071 55002	⚠	Fuse T5A 250V /37
1107	4822 071 54002	⚠	Fuse T4A 250V /22
1107	4822 071 55002	⚠	Fuse T5A 250V /37
1202	4822 267 10953		Flex Socket 7pin Vert.

CAPACITORS

2100	4822 122 33449		47nF 30% 50V
2101	4822 122 33449		47nF 30% 50V
2102	4822 124 40255		100µF 20% 63V
2106	4822 121 43526		47nF 5% 250V
2107	4822 124 40255		100µF 20% 63V
2108	4822 124 81151		22µF 20% 50V
2110	5322 121 42386		100nF 5% 63V
2111	5322 121 42386		100nF 5% 63V
2112	5322 121 42386		100nF 5% 63V
2114	4822 124 12328		6800µF 20% 16V
2115	4822 124 80563		4700µF 20% 35V

RESISTORS

3103	4822 052 10109	⚠	10R 5% 0,33W
3105	4822 050 11002		1k 1% 0,4W
3106	4822 050 11002		1k 1% 0,4W
3110	4822 117 12148	⚠	1R5 5% 0,33W
3111	4822 116 52276		3k9 5% 0,5W
3112	4822 116 52256		2k2 5% 0,5W
3113	4822 050 23303		33k 1% 0,6W
3114	4822 053 21106	⚠	10M 5% 0,5W
3115	4822 116 52238		12k 5% 0,5W

COILS & FILTERS

5100	3103 308 30610	⚠	Standby Transformer /22
5107	4822 157 11832		Mains Filter 400µH 3A

DIODES

6100	4822 130 30621		1N4148
6104	4822 130 31878		1N4003G
6105	4822 130 31878		1N4003G
6106	4822 130 31878		1N4003G
6107	4822 130 31878		1N4003G
6110	4822 130 30621		1N4148
6111	4822 130 30621		1N4148
6112	4822 130 30621		1N4148
6113	4822 130 30621		1N4148
6115	4822 130 34382		BZX79-B8V2
6116	4822 130 31878		1N4003G
6117	4822 130 34142		BZX79-B33
6118	4822 130 82078		D5SBA20
6119	4822 130 30621		1N4148
6120	4822 130 30621		1N4148

TRANSISTORS

7003	4822 130 40981	BC337-25
7005	4822 130 41246	BC327-25

Note: Only the parts mentioned in this list are normal service spare parts.

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DO NOT PRINT

COMBI & REGULATOR BOARDS

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Brief introduction of the Regulator Board

The regulator board provides the following:
a) 12V supply: +12V_A and +12V_M derived from the +A supply
b) 5,6V and 5V supply: +5V6 and 5V_VCD derived from the +A/2 supply

Brief introduction of the Combi Board

1. Source selection & Sound control
   Audio Processor IC 7550 (TDA7468D) provides the source selection and sound control features via the I2C bus (I2C_CLK and I2C_DATA lines).

2. Line out
   Line out is taken directly from the Audio Processor IC 7550. Muting is done via Transistors 7500, 7501 and 7508.

3. Pre-amplifier
   IC7510 (NJM4556AM) provides pre-amplification of the output signals from the Audio Processor IC 7550. Muting of audio signals to Power Amplifier IC 7200 during Headphone application and Source switching is done via transistors 7514, 7515, 7540 and 7541

4. Headphone and Sub-woofer outputs
   The headphone and Sub-woofer output is taken from the pre-amplifier out. Muting of these outputs are done via transistors 7511, 7512, 7522 and 7523.

5. Power Amplifier
   IC 7200 (AN7125) is used as Power amplifier. It function as Class G amplifier together with transistor 7204 (BDW94C) which switches the supply between supply source +A and +A/2.

6. Protection Circuit
   Transistors 7201, 7202 and 7203 provides protection against:
   - short-circuit of speaker terminals
   - short-circuit of speaker terminals to ground

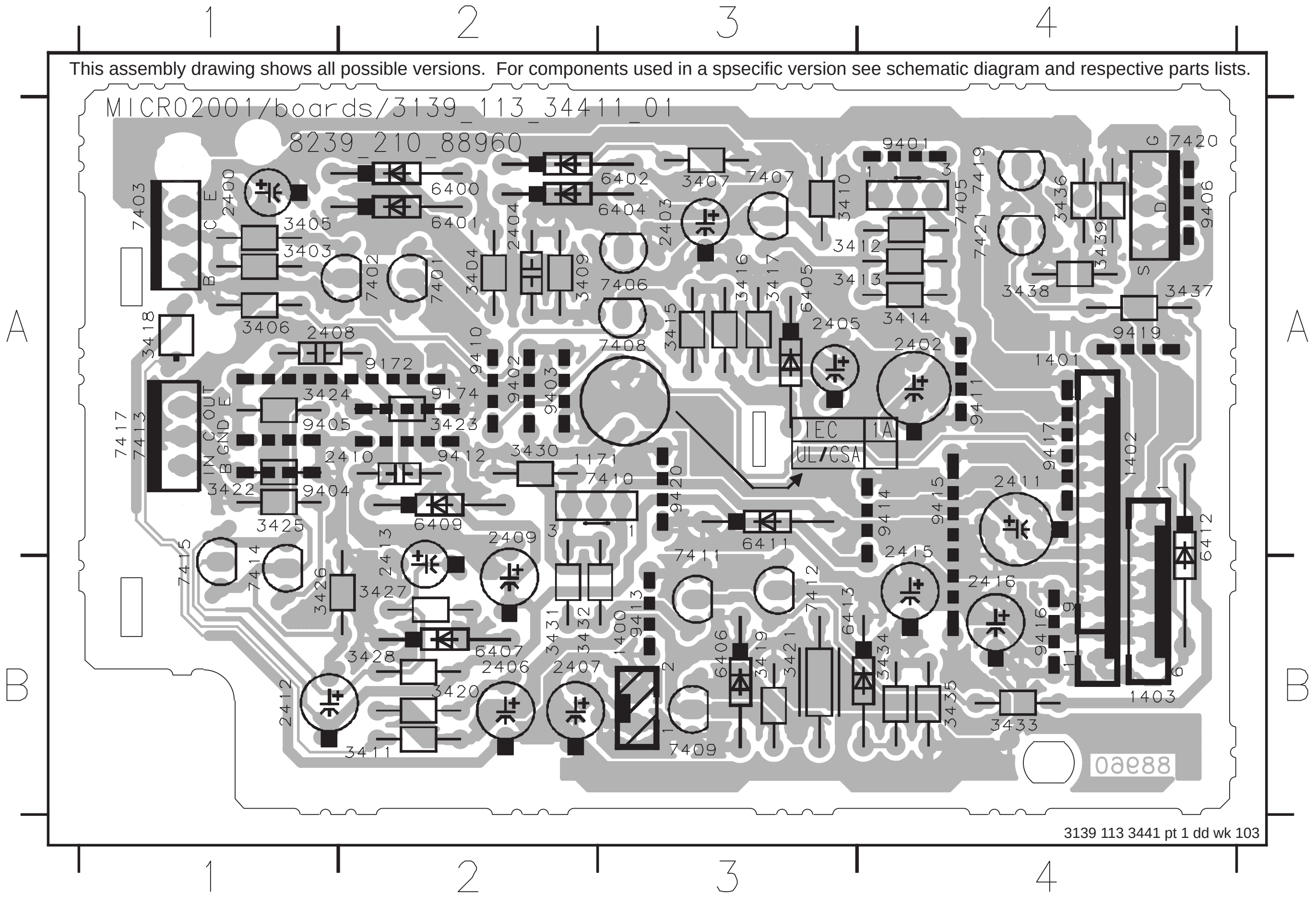
7. Digital out buffer
   IC 7525 (74VUD40) act as buffer to boost the digital output level

8. I/O Expander
   I/O Expander IC 7526 (M62320FP) converts the I2C bus (I2C_CLK and I2C_DATA lines) into additional control lines.

9. +5V6_CON supply
   IC 7529 (MC78L05) provides the necessary supply to power µProcessor IC 7102 (TMP88CU74F) during ECO Power mode.

COMPONENT SIDE VIEW - REGULATOR BOARD

1171	A2	2408	A1	3407	A3	3420	B2	3433	B4	6406	B3	7408	A3	9172	A2	9414	A4
1400	B3	2409	A2	3409	A2	3421	B3	3434	B4	6407	B2	7409	B3	9174	A2	9415	A4
1401	A4	2410	A2	3410	A3	3422	A1	3435	B4	6409	A2	7410	A3	9401	A4	9416	B4
1402	A4	2411	A4	3411	B2	3423	A2	3436	A4	6411	A3	7411	A3	9402	A2	9417	A4
1403	B4	2412	B1	3412	A3	3424	A1	3437	A4	6412	A4	7412	B3	9403	A2	9419	A4
2400	A1	2413	A2	3413	A3	3425	A1	3438	A4	6413	B3	7413	A1	9404	A1	9420	A3
2402	A4	2415	A4	3414	A4	3426	B1	3439	A4	7401	A2	7414	B1	9405	A1		
2403	A3	2416	B4	3415	A3	3427	B2	6400	A2	7402	A2	7415	B1	9406	A4		
2404	A2	3403	A1	3416	A3	3428	B2	6401	A2	7403	A1	7417	A1	9410	A2		
2405	A3	3404	A2	3417	A3	3430	A2	6402	A3	7405	A4	7419	A4	9411	A4		
2406	B2	3405	A1	3418	A1	3431	B2	6404	A3	7406	A3	7420	A4	9412	A2		
2407	B2	3406	A1	3419	B3	3432	B2	6405	A3	7407	A3	7421	A4	9413	B3		


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

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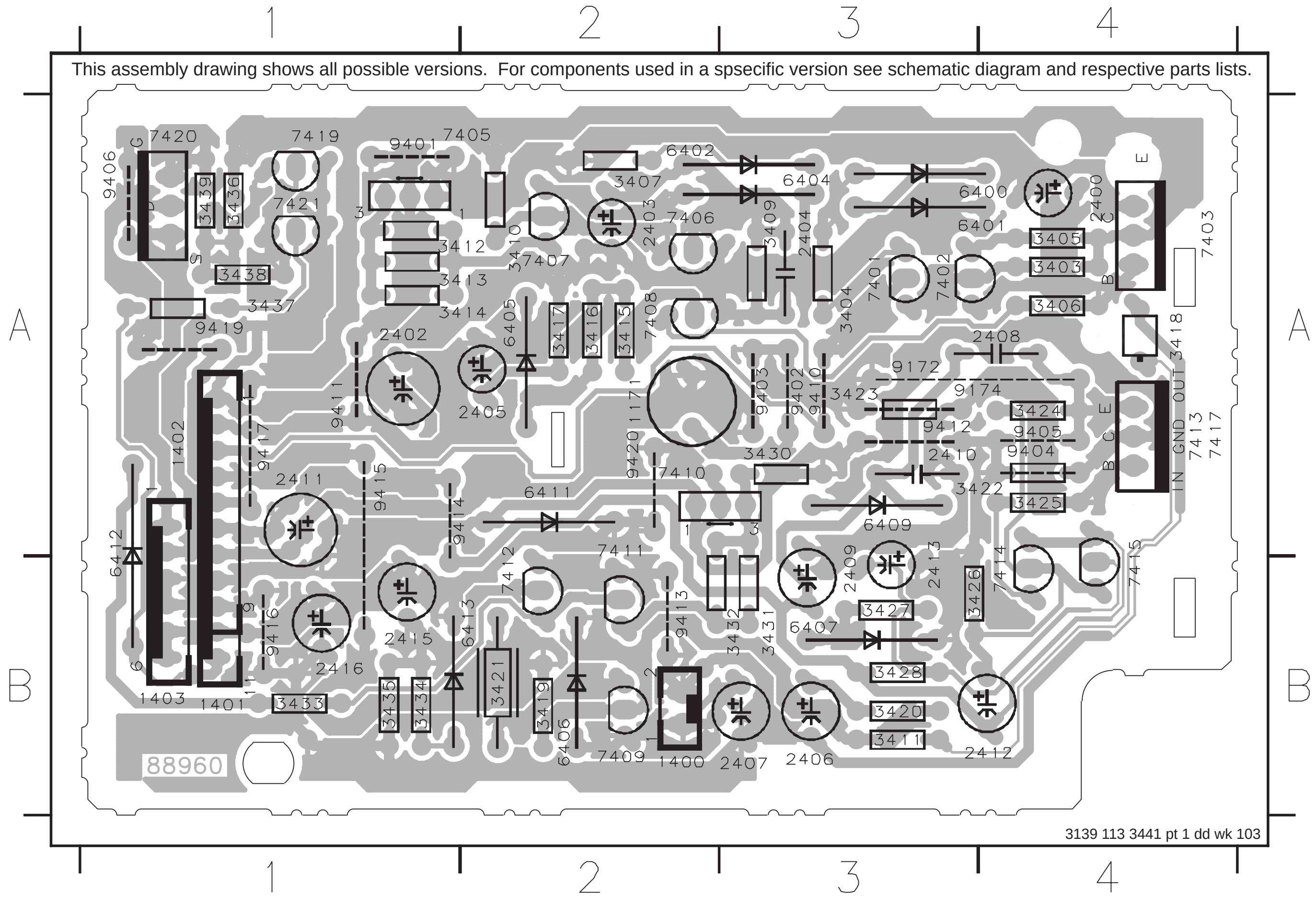
COPPER SIDE VIEW - REGULATOR BOARD

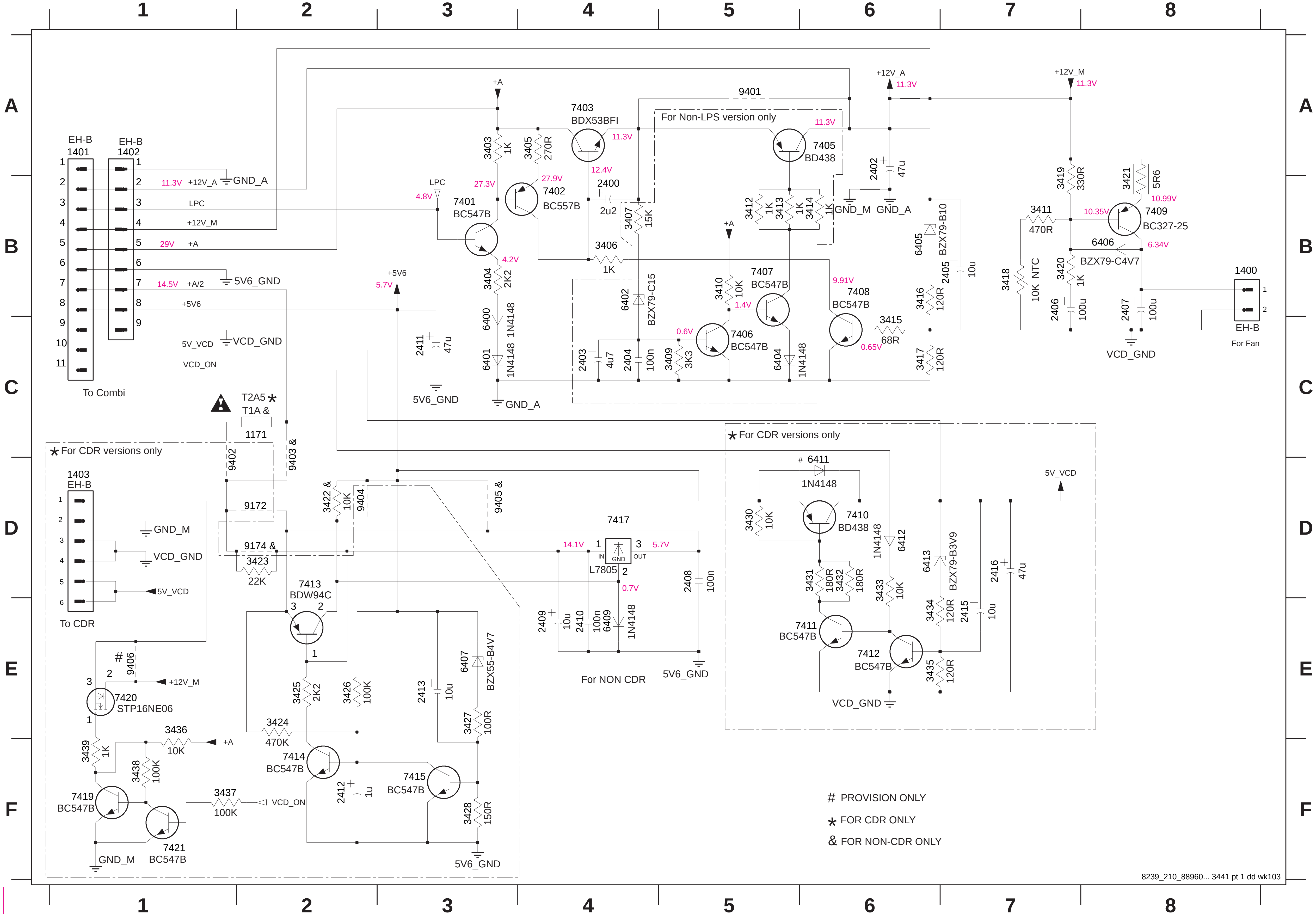
1171	A2	2408	A4	3407	A2	3420	B3	3433	B1	6406	B2	7408	A2	9172	A3	9414	A1
1400	B2	2409	B3	3409	A3	3421	B2	3434	B1	6407	B3	7409	B2	9174	A3	9415	A1
1401	B1	2410	A3	3410	A2	3422	A4	3435	B1	6409	A3	7410	A2	9401	A1	9416	B1
1402	A1	2411	A1	3411	B3	3423	A3	3436	A1	6411	A2	7411	A2	9402	A3	9417	A1
1403	B1	2412	B4	3412	A2	3424	A4	3437	A1	6412	A1	7412	B2	9403	A3	9419	A1
2400	A4	2413	B3	3413	A2	3425	A4	3438	A1	6413	B2	7413	A4	9404	A4	9420	A2
2402	A1	2415	B1	3414	A2	3426	B3	3439	A1	7401	A3	7414	B4	9405	A4		
2403	A2	2416	B1	3415	A2	3427	B3	6400	A4	7402	A3	7415	B4	9406	A1		
2404	A3	3403	A4	3416	A2	3428	B3	6401	A4	7403	A4	7417	A4	9410	A3		
2405	A2	3404	A3	3417	A2	3430	A3	6402	A2	7405	A2	7419	A1	9411	A1		
2406	B3	3405	A4	3418	A4	3431	B3	6404	A3	7406	A2	7420	A1	9412	A3		
2407	B3	3406	A4	3419	B2	3432	B3	6405	A2	7407	A2	7421	A1	9413	B2		


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

3139 113 3441 pt 1 dd wk 103

CIRCUIT DIAGRAM - REGULATOR BOARD

1171 C2	1403 D1	2404 C4	2408 D5	2412 F2	3403 A3	3407 B4	3412 B5	3416 B6	3420 B7	3424 E2	3428 F3	3433 D6	3437 F1	6401 C3	6406 B8	6412 D6	7403 A4	7408 B6	7412 E6	7417 D4	9172 D2	9403 D2
1400 B8	2400 B4	2405 B7	2409 E4	2413 E3	3404 B3	3409 C5	3413 B5	3417 C6	3421 B8	3425 E2	3430 D5	3434 E6	3438 F1	6402 B4	6407 E3	6413 D6	7405 A6	7409 B8	7413 D2	7419 F1	9174 D2	9404 D2
1401 A1	2402 A6	2406 B7	2410 E4	2415 E7	3405 A4	3410 B5	3414 B6	3418 B7	3422 D2	3426 E2	3431 D6	3435 E6	3439 F1	6404 C5	6409 E4	7401 B3	7406 C5	7410 D6	7414 F2	7420 E1	9401 A5	9405 D3
1402 A1	2403 C4	2407 B8	2411 C3	2416 D7	3406 B4	3411 B7	3415 C6	3419 B7	3423 D2	3427 E3	3432 D6	3436 E1	6400 C3	6405 B6	6411 D6	7402 B4	7407 B5	7411 E6	7415 F3	7421 F1	9402 D1	9406 E1


1
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7
8
A
B
C
D
E
F
EH-B
1401
EH-B
1402
To Combi
+12V_A
GND_A
LPC
+12V_M
+A
+A/2
5V6_GND
+5V6
5V_VCD
VCD_GND
VCD_ON
11.3V
29V
14.5V
7401
BC547B
7402
BC557B
7403
BDX53BFI
3403
1K
3405
270R
3404
2K2
6400
1N4148
6401
1N4148
27.3V
27.9V
4.8V
4.2V
12.4V
2400
2u2
3406
1K
3407
15K
6402
BZX79-C15
9401
For Non-LPS version only
7405
BD438
2402
47u
3412
1K
3413
1K
3414
1K
GND_M
7407
BC547B
7406
BC547B
3410
10K
1.4V
0.6V
2403
4u7
2404
100n
3409
3K3
6404
1N4148
7408
BC547B
9.91V
0.65V
3415
68R
3416
120R
3417
120R
6405
BZX79-B10
2405
10u
+12V_M
3419
330R
3421
5R6
10.99V
10.35V
3411
470R
7409
BC327-25
6406
BZX79-C4V7
6.34V
3418
10K NTC
3420
1K
2406
100u
2407
100u
1400
EH-B
For Fan
+5V6
5.7V
2411
47u
T2A5 *
T1A &
1171
* For CDR versions only
9402
9403 &
1403
EH-B
To CDR
9172
9174 &
3423
22K
3422 &
10K
9404
9405 &
7413
BDW94C
7417
L7805
IN
GND
OUT
14.1V
5.7V
0.7V
2408
100n
2409
10u
2410
100n
6409
1N4148
For NON CDR
6407
BZX55-B4V7
2413
10u
3425
2K2
3426
100K
3424
470K
7414
BC547B
7415
BC547B
2412
1u
3427
100R
3428
150R
# 9406
+12V_M
7420
STP16NE06
3436
10K
3439
1K
3438
100K
7419
BC547B
7421
BC547B
3437
100K
VCD_ON
GND_M
* For CDR versions only
# 6411
1N4148
5V_VCD
3430
10K
7410
BD438
3431
180R
3432
180R
6412
1N4148
3433
10K
6413
BZX79-B3V9
2416
47u
7411
BC547B
7412
BC547B
3434
120R
2415
10u
3435
120R
VCD_GND
# PROVISION ONLY
* FOR CDR ONLY
& FOR NON-CDR ONLY
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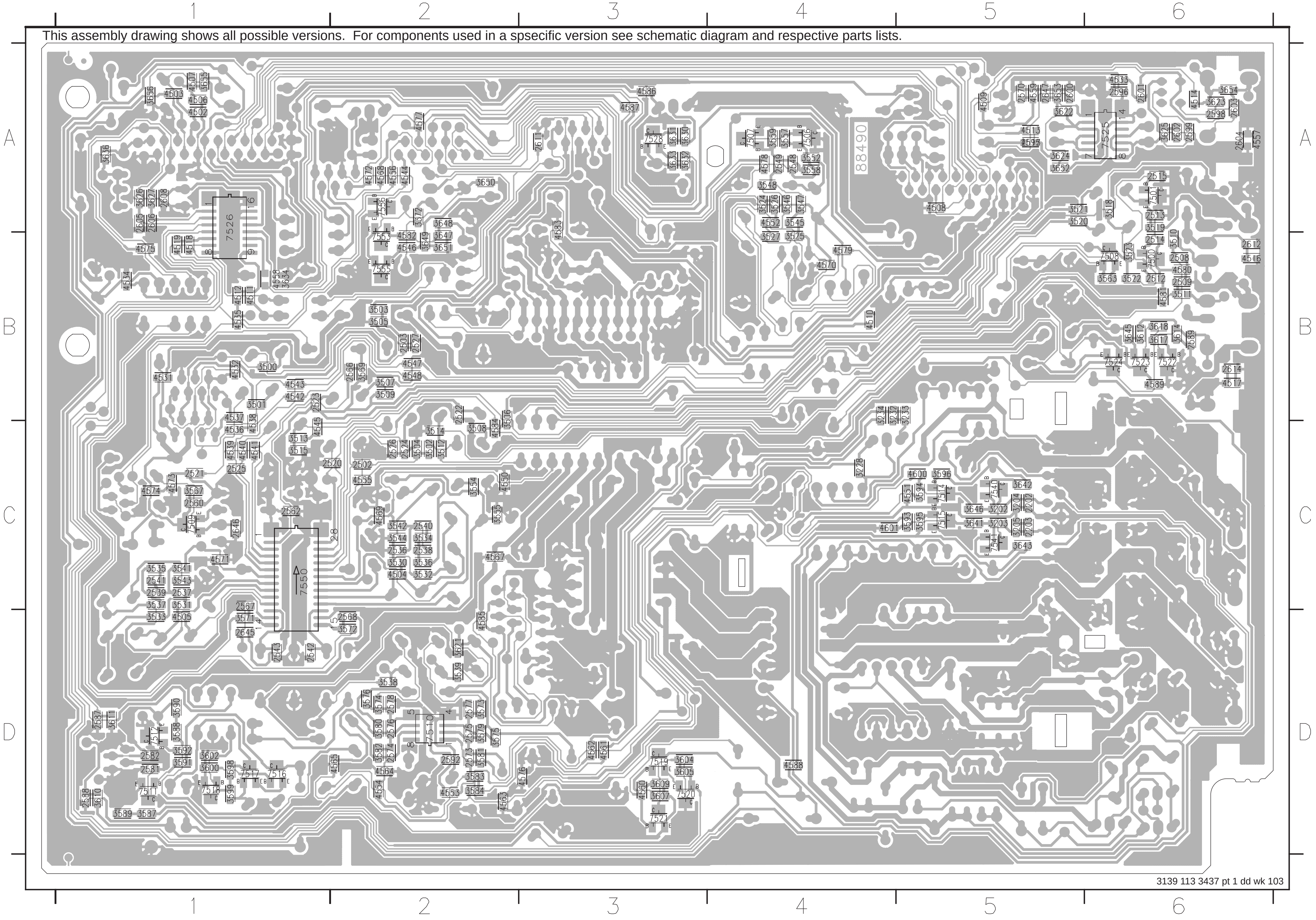
CHIP LAYOUT - COMBI BOARD

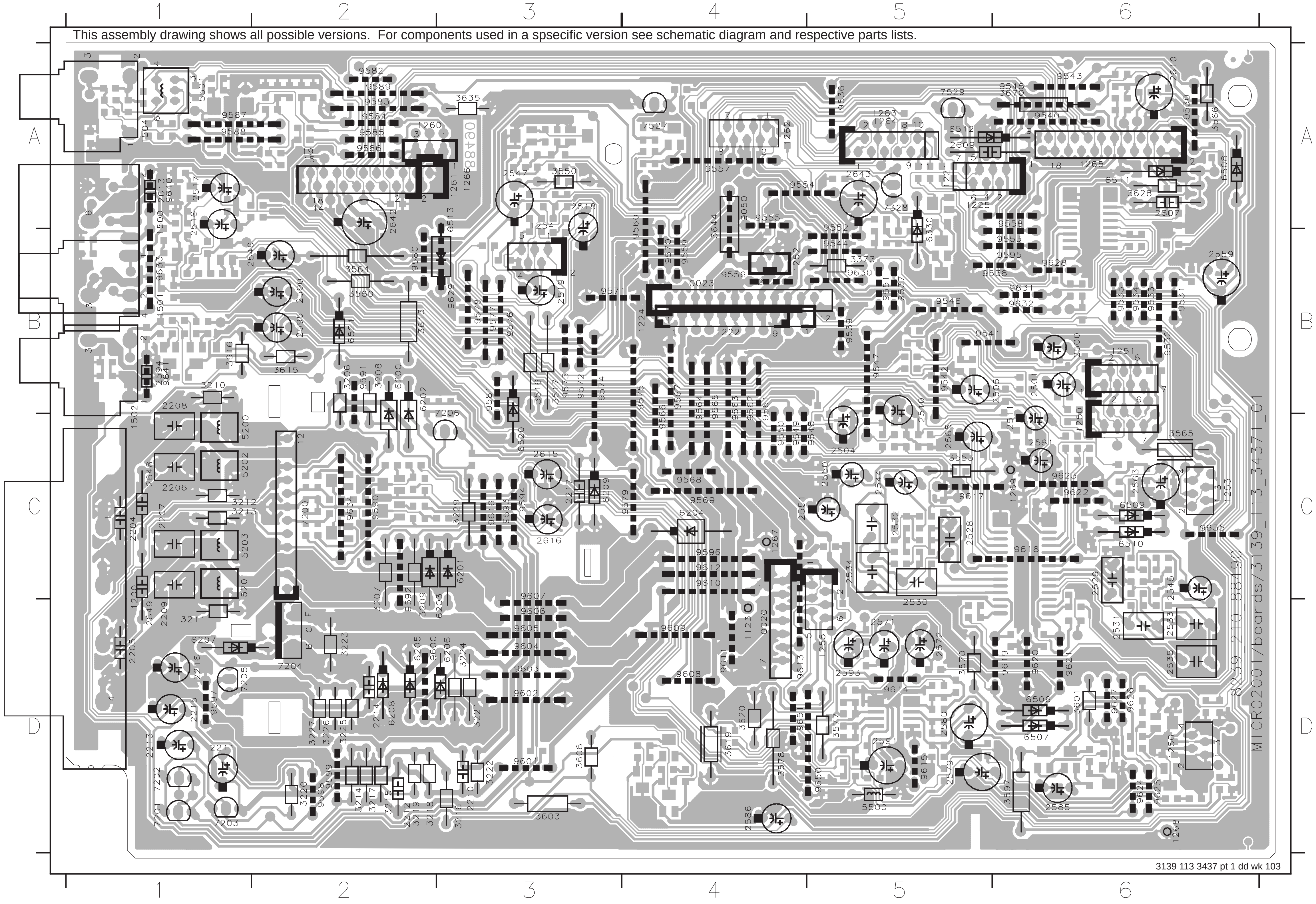


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

3139 113 3437 pt 1 dd wk 103

2202	C5	3505	B2	3610	D1	4558	B1
2203	C5	3506	B2	3611	D1	4559	A5
2502	C2	3507	B2	3612	B6	4560	D3
2503	B2	3508	C2	3614	B6	4561	D3
2508	B6	3509	B2	3617	B6	4562	D3
2509	B6	3510	B6	3618	B6	4563	D2
2512	B6	3511	B6	3621	D2	4564	D2
2513	A6	3512	C2	3622	A5	4565	D2
2514	B6	3513	C1	3623	A6	4567	C2
2515	A6	3514	C2	3624	A5	4568	A2
2520	C2	3515	C1	3625	A6	4569	C2
2521	C1	3518	A6	3626	A1	4570	B4
2522	B2	3519	A6	3627	A1	4571	C1
2523	B1	3520	A5	3630	A3	4572	A2
2524	C2	3521	A5	3631	A3	4573	C1
2525	C1	3522	B6	3632	A3	4574	C1
2526	C2	3523	B6	3633	A3	4575	B1
2527	B2	3524	A4	3634	B1	4576	D3
2536	C2	3525	B4	3636	A1	4577	A2
2537	C1	3526	A4	3641	C5	4578	A4
2538	C2	3527	B4	3642	C5	4579	B4
2539	C1	3530	C2	3643	C5	4580	B6
2540	C2	3531	C1	3645	B6	4581	B6
2541	C1	3532	C2	3646	C5	4582	B2
2542	D1	3533	D1	3647	B2	4583	A3
2543	D1	3534	C2	3648	A2	4584	C2
2548	A4	3535	C1	3649	B2	4585	D2
2549	A4	3536	C2	3650	A2	4586	A3
2560	C1	3537	C1	3651	B2	4587	A3
2562	C1	3538	D2	3652	A5	4588	D4
2566	B2	3539	D2	3653	A5	4589	B6
2567	C1	3541	C1	3654	A6	4600	C5
2568	D2	3542	C2	3655	A1	4601	C4
2570	A5	3543	C1	3656	A1	7500	B6
2573	D2	3544	C2	4502	A1	7501	A6
2574	D2	3545	A4	4503	A1	7506	A4
2575	D2	3546	A4	4504	C2	7507	A4
2576	D2	3547	A4	4505	D1	7508	B6
2577	D2	3548	A4	4506	A1	7509	C1
2578	D2	3552	A4	4507	A1	7510	D2
2581	D1	3554	C2	4508	A5	7511	D1
2582	D1	3555	C2	4509	A5	7512	D1
2587	D1	3557	A4	4510	B4	7514	C5
2588	D1	3558	A4	4511	B1	7515	C5
2589	B6	3559	A4	4512	B1	7516	D1
2592	D2	3563	B6	4513	A5	7517	D1
2596	A6	3567	C1	4514	A6	7518	D1
2597	A5	3569	B2	4515	A5	7519	D3
2598	A6	3571	D1	4516	B6	7520	D3
2599	A6	3572	D2	4517	B6	7521	D3
2600	A5	3573	D2	4518	B1	7522	B6
2601	A6	3574	D2	4519	B1	7523	B6
2602	A6	3575	D2	4531	B1	7524	B6
2603	A6	3576	D2	4532	B1	7525	A6
2604	A6	3579	D2	4533	A6	7526	A1
2605	A1	3580	D2	4534	B1	7528	A3
2606	A1	3581	D2	4535	B1	7540	C5
2608	A1	3582	D2	4536	C1	7541	C5
2611	A3	3583	D2	4537	B1	7550	C1
2612	B6	3584	D2	4538	C1	7553	B2
2614	B6	3587	D1	4539	C1	7555	B2
2645	D1	3588	D1	4540	C1	7556	A2
2646	C1	3589	D1	4541	C1		
2647	A5	3590	D1	4542	B1		
3202	C5	3591	D1	4543	B1		
3203	C5	3592	D1	4544	A2		
3204	C5	3593	C5	4545	C1		
3205	C5	3594	C5	4546	B2		
3228	C4	3595	C5	4547	B2		
3232	B4	3596	C5	4548	B2		
3233	B5	3598	D1	4550	C2		
3234	B4	3599	D1	4551	C5		
3372	A2	3600	D1	4552	A4		
3500	B1	3602	D1	4553	D2		
3501	B1	3604	D3	4554	D2		
3502	C2	3605	D3	4555	C2		
3503	B2	3607	D3	4556	A2		
3504	C2	3609	D3	4557	A6		

COMPONENT LAYOUT - COMBI BOARD



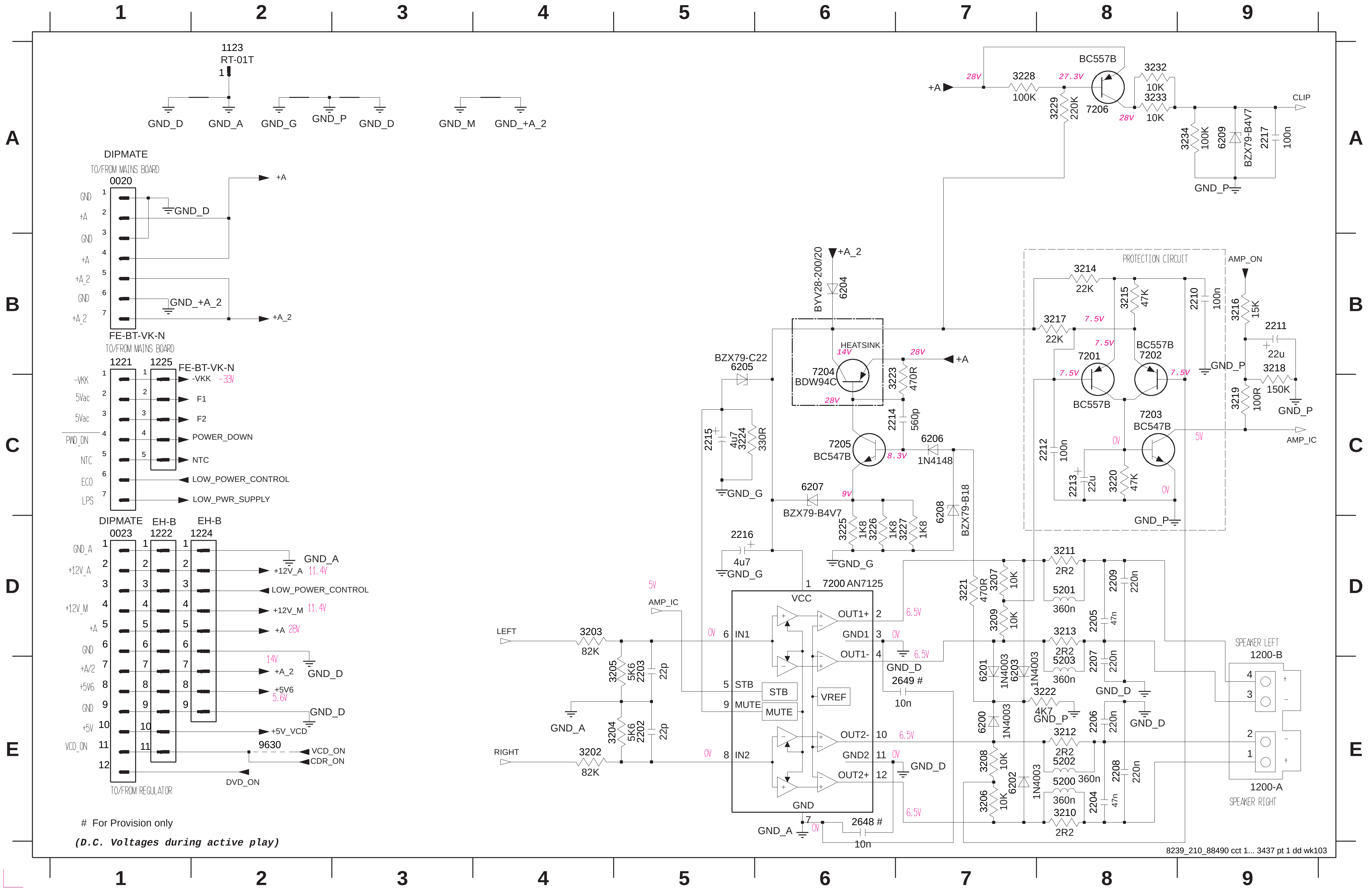
This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

1
2
3
4
5
6
A
B
C
D
MICRO20017/boards/3139_113_3437_01
8239 210 8849
3139 113 3437 pt 1 dd wk 103

0020	D4	2591	D5	6330	B5	9586	A2
0023	B4	2593	D5	6506	D6	9587	A1
1123	D4	2594	B1	6507	D6	9588	A1
1200	C1	2595	B2	6508	A6	9589	A2
1221	A5	2607	A6	6509	C6	9590	C2
1222	B4	2609	A5	6510	C6	9591	B2
1224	B4	2610	A6	6511	A6	9592	D2
1225	A5	2613	A1	6512	A5	9593	C3
1250	C6	2615	C3	6513	A3	9594	C3
1251	B6	2616	C3	6520	C3	9595	B6
1252	B4	2642	A2	6521	B2	9596	C4
1253	C6	2643	A5	7200	C2	9597	D1
1254	A3	2648	C1	7201	D1	9598	D2
1255	D5	2649	D1	7202	D1	9599	D2
1256	D6	3206	B2	7203	D1	9600	D2
1260	A2	3207	D2	7204	D2	9601	D3
1261	A3	3208	B2	7205	D1	9602	D3
1262	A4	3209	D2	7206	B3	9603	D3
1263	A5	3210	B1	7328	A5	9604	D3
1264	A5	3211	D1	7527	A4	9605	D3
1265	A6	3212	C1	7529	A5	9606	D3
1266	A3	3213	C1	9050	A4	9607	C3
1267	C4	3214	D2	9530	A6	9608	D4
1268	D6	3215	D2	9531	B6	9609	D4
1269	C6	3216	D3	9532	B6	9610	C4
1500	A1	3217	D2	9533	B6	9611	D4
1501	B1	3218	D2	9534	B6	9612	C4
1502	C1	3219	D2	9535	B6	9613	D4
1504	A1	3220	D2	9536	A5	9614	D5
2204	C1	3221	D3	9537	B5	9615	D5
2205	D1	3222	D3	9538	B6	9616	C3
2206	C1	3223	D2	9539	B5	9617	C5
2207	C1	3224	D3	9540	A6	9618	C6
2208	B1	3225	D2	9541	B5	9619	D6
2209	D1	3226	D2	9542	B5	9620	D6
2210	D3	3227	D2	9543	A6	9621	D6
2211	D1	3229	C3	9544	B5	9622	C6
2212	D2	3373	B5	9545	A6	9623	C6
2213	D1	3516	B3	9546	B5	9624	D6
2214	D2	3517	B3	9547	B5	9625	D6
2215	D1	3550	A3	9548	C5	9626	D6
2216	D1	3553	C5	9549	C4	9627	D6
2217	C3	3560	B2	9550	C4	9628	B6
2500	B6	3564	B2	9551	B5	9629	B3
2501	B6	3565	C6	9552	A5	9630	B5
2504	C5	3566	A6	9553	B6	9631	B6
2505	B6	3570	D5	9554	A4	9632	B6
2510	B5	3577	D5	9555	A4	9633	B1
2511	C6	3578	D4	9556	B4	9634	C2
2516	A1	3597	D6	9557	A4	9635	C6
2517	A1	3601	D6	9558	A6	9640	A1
2518	A3	3603	D3	9559	B4	9641	B1
2519	B3	3606	D3	9560	A4	9650	D5
2528	C5	3613	B2	9561	B4	9651	D4
2529	C6	3615	B2	9562	B4		
2530	D5	3616	B1	9563	B4		
2531	D6	3619	D4	9564	B4		
2532	C5	3620	D4	9565	B4		
2533	D6	3628	A6	9566	C4		
2534	C5	3635	A3	9567	B4		
2535	D6	3644	A4	9568	C4		
2544	C5	3670	A6	9569	C4		
2545	C6	5200	C1	9570	B4		
2546	B1	5201	C1	9571	B3		
2547	A3	5202	C1	9572	B3		
2550	C5	5203	C1	9573	B3		
2551	C4	5500	D5	9574	B3		
2559	B6	5501	A1	9575	B4		
2561	C6	6200	B2	9576	B3		
2563	C6	6201	C3	9577	B3		
2565	C5	6202	B2	9578	B3		
2571	D5	6203	D3	9579	C4		
2572	D5	6204	C4	9580	B2		
2579	D5	6205	D2	9581	B3		
2580	D5	6206	D3	9582	A2		
2585	D6	6207	D1	9583	A2		
2586	D4	6208	D2	9584	A2		
2590	B2	6209	C3	9585	A2		

COMBI CIRCUIT - POWER AMPLIFIER PART

0020	A1
0023	D1
1123	A2
1200-A	E9
1200-B	E9
1221	B1
1222	D1
1224	D1
1225	B1
2202	E5
2203	E5
2204	E8
2205	D8
2206	E8
2207	E8
2208	E8
2209	D8
2210	B9
2211	B9
2212	C8
2213	C8
2214	C6
2215	C5
2216	D5
2217	A9
2648	E6
2649	E7
3202	E4
3203	D4
3204	E4
3205	E5
3206	E7
3207	D7
3208	E7
3209	D7
3210	E8
3211	D8
3212	E8
3213	D8
3214	B8
3215	B8
3216	B9
3217	B8
3218	B9
3219	C9
3220	C8
3221	D7
3222	E8
3223	C7
3224	C5
3225	D6
3226	D6
3227	D7
3228	A7
3229	A8
3232	A8
3233	A8
3234	A9
5200	E8
5201	D8
5202	E8
5203	E8
6200	E7
6201	E7
6202	E7
6203	E7
6204	B6
6205	B5
6206	C7
6207	C6
6208	C7
6209	A9
7200	D6
7201	B8
7202	B8
7203	C8
7204	C6
7205	C6
7206	A8
9630	E2


1
2
3
4
5
6
7
8
9
A
B
C
D
E
1123
RT-01T
GND_D
GND_A
GND_G
GND_P
GND_M
GND_+A_2
DIPMATE
TO/FROM MAINS BOARD
0020
GND
+A
+A_2
+A
+A_2
FE-BT-VK-N
1221
1225
-VKK
-33V
5Vac
F1
F2
PWD_DN
POWER_DOWN
NTC
ECO
LOW_POWER_CONTROL
LPS
LOW_PWR_SUPPLY
0023
EH-B
1222
1224
GND_A
+12V_A
11.4V
+12V_M
+A
28V
+A/2
14V
+5V6
5.6V
+5V
+5V_VCD
VCD_ON
CDR_ON
9630
DVD_ON
TO/FROM REGULATOR
BC557B
3228
100K
27.3V
3229
220K
7206
3232
10K
3233
CLIP
3234
100K
6209
BZX79-B4V7
2217
100n
BYV28-200/20
6204
HEATSINK
7204
BDW94C
3223
470R
2214
560p
BZX79-C22
6205
2215
4u7
3224
330R
7205
BC547B
8.3V
6206
1N4148
6207
BZX79-B4V7
9V
3225
1K8
3226
3227
6208
BZX79-B18
2216
PROTECTION CIRCUIT
3214
22K
3215
47K
2210
3217
7.5V
7201
BC557B
7202
7203
BC547B
0V
5V
2212
2213
22u
3220
AMP_ON
3216
15K
2211
3218
150K
3219
100R
AMP_IC
LEFT
RIGHT
3203
82K
3202
3205
5K6
2203
22p
3204
2202
7200 AN7125
VCC
IN1
OUT1+
GND1
OUT1-
STB
MUTE
VREF
OUT2-
GND2
OUT2+
IN2
GND
6.5V
2649 #
10n
2648 #
3221
3207
3209
3206
3208
6201
1N4003
6203
6200
6202
3211
2R2
5201
360n
2209
220n
2205
47n
3213
5203
2207
3222
4K7
2206
3212
5202
2208
5200
2204
3210
SPEAKER LEFT
1200-B
SPEAKER RIGHT
1200-A

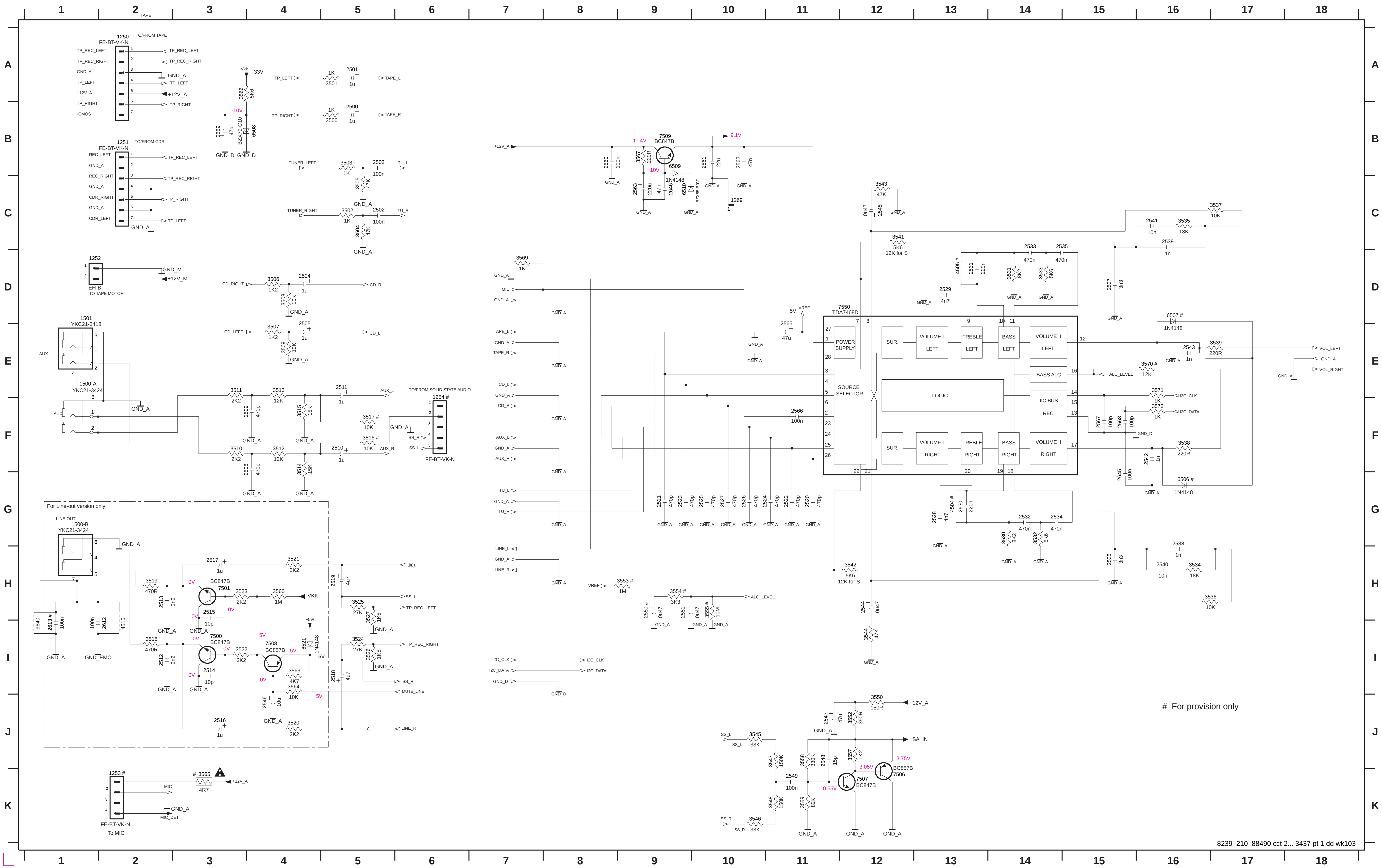
# For Provision only

(D.C. Voltages during active play)

8239_210_88490 cct 1... 3437 pt 1 dd wk103

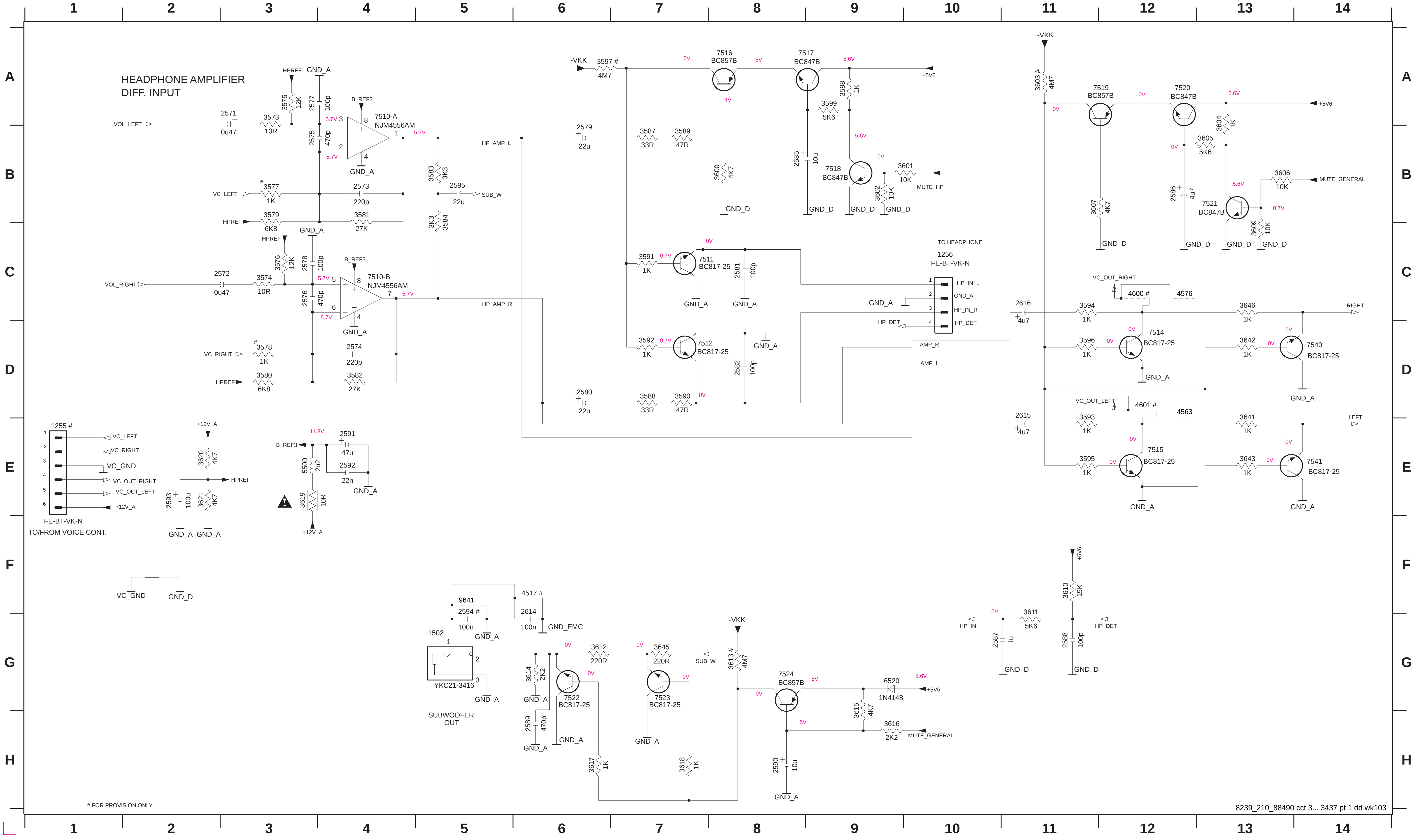
COMBI CIRCUIT - SOURCE SELECT & SOUND CONTROL PART

1250 A2
1251 B2
1252 D1
1253 K2
1254 F6
1269 C10
1500-A E1
1500-B G1
1501 D1
2500 B5
2501 A5
2502 C5
2503 B5
2504 D4
2505 E4
2508 F4
2509 F4
2510 F5
2511 E5
2512 I2
2513 H2
2514 I3
2515 H3
2516 J3
2517 H3
2518 I5
2519 H5
2520 G11
2521 G9
2522 G11
2523 G9
2524 G11
2525 G10
2526 G10
2527 G10
2528 G13
2529 D13
2530 G13
2531 D13
2532 G14
2533 C14
2534 G14
2535 C14
2536 H15
2537 D15
2538 G16
2539 C16
2540 H16
2541 C16
2542 F16
2543 E16
2544 H12
2545 C12
2546 J4
2547 J11
2548 J11
2549 K11
2550 H9
2551 H9
2559 B3
2560 B8
2561 B10
2562 B10
2563 C9
2565 E11
2566 F11
2567 F15
2568 F15
2612 I2
2613 I1
2645 G15
2646 C9
3500 B5
3501 A5
3502 C5
3503 B5
3504 C5
3505 C5
3506 D4
3507 E4
3508 D4
3509 E4
3510 F3
3511 E3
3512 F4
3513 E4
3514 F4
3515 F4
3516 F5
3517 F5
3518 I2
3519 H2
3520 J4
3521 H4
3522 I3
3523 H3
3524 I5
3525 H5
3526 I5
3527 H5
3530 G14
3531 D14
3532 G14
3533 D14
3534 H16
3535 C16
3536 H17
3537 C17
3538 F16
3539 E17
3541 C12
3542 H12
3543 C12
3544 I12
3545 J10
3546 K10
3547 J11
3548 K11
3550 J12
3552 J12
3553 H9
3554 H9
3555 H10
3557 J12
3558 J11
3559 K11
3560 H4
3563 I4
3564 I4
3565 K3
3566 A3
3567 B9
3569 D7
3570 E16
3571 E16
3572 F16
4504 G13
4505 D13
4516 I2
6506 G16
6507 D16
6508 B4
6509 B9
6510 C9
6521 I4
7500 I3
7501 H3
7506 K12
7507 K12
7508 I4
7509 B9
7550 D12
9640 I1


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K
TAPE
1250 FE-BT-VK-N TO/FROM TAPE
TP_REC_LEFT
TP_REC_RIGHT
GND_A
TP_LEFT
+12V_A
TP_RIGHT
-CMOS
-Vkk -33V
3566 5K6
-10V
2559 47u
BZX79-C10
6508
GND_D
1251 FE-BT-VK-N TO/FROM CDR
REC_LEFT
REC_RIGHT
CDR_RIGHT
CDR_LEFT
1252 EH-B TO TAPE MOTOR
GND_M
+12V_M
1501 YKC21-3418
AUX
1500-A YKC21-3424
For Line-out version only
LINE OUT
1500-B YKC21-3424
9640
2613 # 100n
2612 100n
4516
GND_EMC
1253 # FE-BT-VK-N To MIC
# 3565 4R7
MIC
MIC_DET
TP_LEFT 3501 1K 2501 1u TAPE_L
TP_RIGHT 3500 1K 2500 1u TAPE_R
TUNER_LEFT 3503 1K 2503 100n TU_L
TUNER_RIGHT 3502 1K 2502 100n TU_R
3505 47K
3504 47K
CD_RIGHT 3506 1K2 2504 1u CD_R
3508 10K
CD_LEFT 3507 1K2 2505 1u CD_L
3509 10K
3511 2K2
3513 12K
2511 1u AUX_L
TO/FROM SOLID STATE AUDIO
1254 # FE-BT-VK-N
2509 470p
3515 15K
3517 # 10K
3516 # 10K
AUX_R
SS_R
SS_L
3510 2K2
3512 12K
2510 1u
2508 470p
3514 15K
2517 1u
3521 2K2
LN_L
3519 470R
2513 2n2
BC847B 7501
0V
3523 2K2
3560 1M
-VKK
2515 10p
SS_L
3525 27K
3527 1K5
TP_REC_LEFT
2519 4u7
3518 470R
2512 2n2
7500 BC847B
2514 10p
3522 2K2
7508 BC857B
5V
+5V6
6521 1N4148
3524 27K
3526 1K5
TP_REC_RIGHT
2518 4u7
3563 4K7
3564 10K
MUTE_LINE
2546 10u
2516 1u
3520 2K2
LINE_R
+12V_A
7509 BC847B
11.4V
9.1V
3567 220R
10V
6509 1N4148
2560 100n
2561 22u
2562 47n
2563 220u
2646 47n
6510 BZX55-B9V1
1269
3569 1K
MIC
TAPE_L
TAPE_R
CD_L
CD_R
AUX_L
AUX_R
TU_L
TU_R
LINE_L
LINE_R
VREF
3553 # 1M
3554 # 3K3
3555 # 10M
2550 # 0u47
2551 0u47
ALC_LEVEL
I2C_CLK
I2C_DATA
GND_D
GND_A
5V
2565 47u
7550 TDA7468D
POWER SUPPLY
SOURCE SELECTOR
SUR.
VOLUME I LEFT
TREBLE LEFT
BASS LEFT
VOLUME II LEFT
BASS ALC
LOGIC
IIC BUS REC
VOLUME I RIGHT
TREBLE RIGHT
BASS RIGHT
VOLUME II RIGHT
2566 100n
2521 470p
2523 470p
2525 470p
2527 470p
2526 470p
2524 470p
2522 470p
2520 470p
3543 47K
2545 0u47
3541 5K6 12K for S
4505 #
2531 220n
2529 4n7
3531 8K2
3533 5K6
2533 470n
2535 470n
2537 3n3
2541 10n
3535 18K
3537 10K
2539 1n
6507 # 1N4148
2543 1n
3539 220R
VOL_LEFT
VOL_RIGHT
3570 # 12K
3571 1K
3572 1K
2567 100p
2568 100p
3538 220R
2542 1n
2645 100n
6506 # 1N4148
2528 4n7
4504 #
2530 220n
2532 470n
2534 470n
3530 8K2
3532 5K6
2536 3n3
2538 1n
2540 10n
3534 18K
3536 10K
3542 5K6 12K for S
2544 0u47
3544 47K
3550 150R
2547 47u
3552 390R
SA_IN
SS_L
3545 33K
3547 150K
3558 330K
2548 15p
3557 1K2
3.05V
3.75V
BC857B 7506
7507 BC847B
0.65V
2549 100n
3548 150K
3559 82K
SS_R
3546 33K
# For provision only
8239_210_88490 cct 2... 3437 pt 1 dd wk103

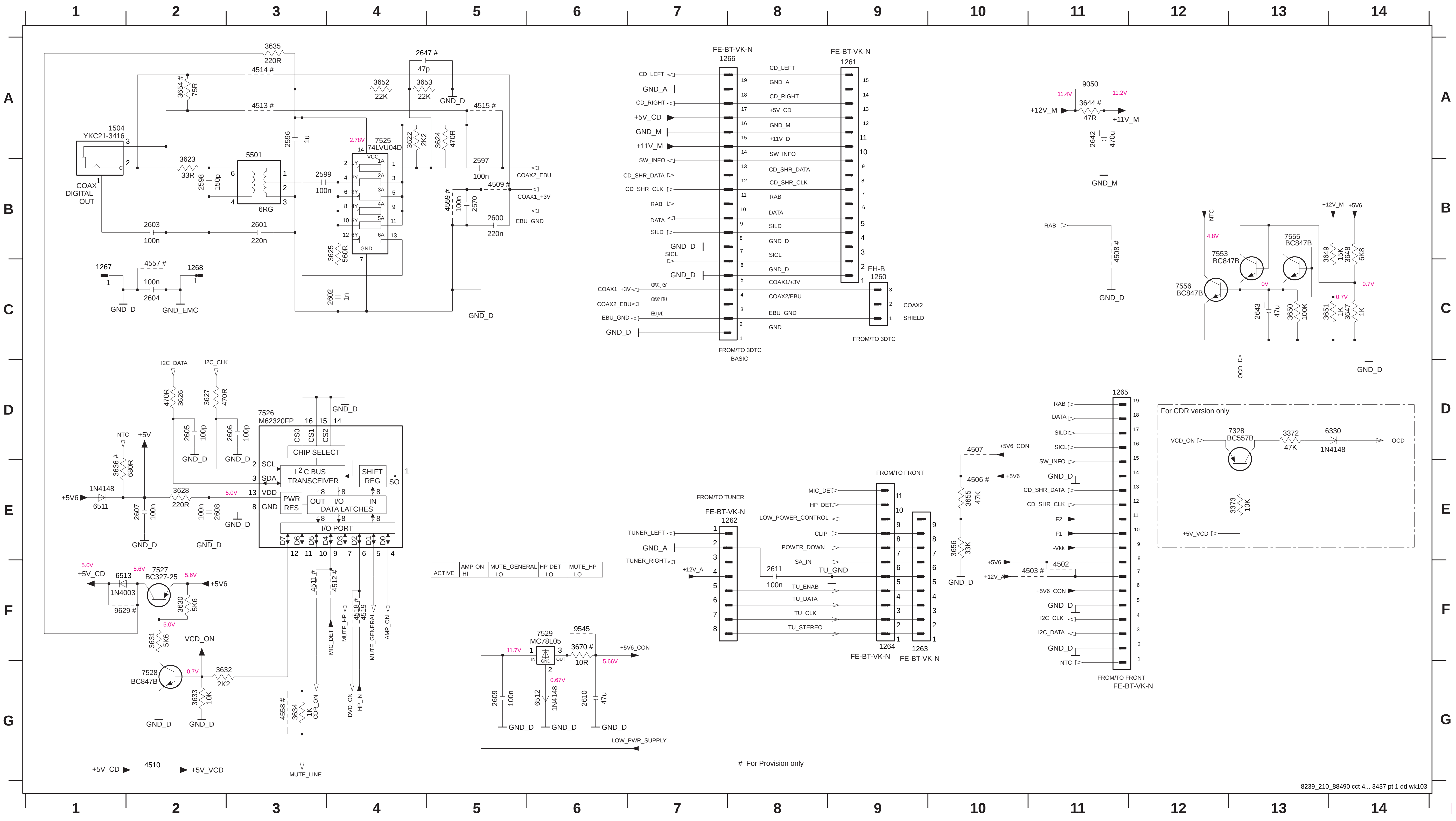
COMBI CIRCUIT - HEADPHONE AMPLIFIER & SUB-WOOFER OUT PART

1255	E1
1256	C10
1502	G5
2571	A3
2572	C3
2573	B4
2574	D4
2575	B3
2576	C3
2577	A3
2578	C3
2579	B6
2580	D6
2581	C8
2582	D8
2585	B8
2586	B12
2587	G10
2588	G11
2589	H6
2590	H8
2591	E4
2592	E4
2593	E2
2594	G5
2595	B5
2614	G6
2615	D11
2616	C11
3573	A3
3574	C3
3575	A3
3576	C3
3577	B3
3578	D3
3579	B3
3580	D3
3581	B4
3582	D4
3583	B5
3584	B5
3587	B7
3588	D7
3589	B7
3590	D7
3591	C7
3592	D7
3593	E11
3594	C11
3595	E11
3596	D11
3597	A6
3598	A9
3599	A9
3600	B8
3601	B10
3602	B9
3603	A11
3604	A13
3605	B13
3606	B13
3607	B11
3609	C13
3610	F11
3611	G11
3612	G6
3613	G8
3614	G6
3615	G9
3616	H9
3617	H6
3618	H7
3619	E3
3620	E2
3621	E2
3641	E13
3642	D13
3643	E13
3645	G7
3646	C13
4517	F6
4563	D12
4576	C12
4600	C12
4601	D12
5500	E3
6520	G9
7510-A	A4
7510-B	C4
7511	C7
7512	D7
7514	D12
7515	E12
7516	A8
7517	A9
7518	B9
7519	A12
7520	A12
7521	B13
7522	G6
7523	G7
7524	G8
7540	D14
7541	E14
9641	F5


HEADPHONE AMPLIFIER
DIFF. INPUT
VOL_LEFT
VOL_RIGHT
VC_LEFT
VC_RIGHT
HPREF
B_REF3
GND_A
GND_D
7510-A
NJM4556AM
7510-B
NJM4556AM
HP_AMP_L
HP_AMP_R
SUB_W
-VKK
+5V6
7516
BC857B
7517
BC847B
7518
BC847B
7511
BC817-25
7512
BC817-25
MUTE_HP
TO HEADPHONE
1256
FE-BT-VK-N
HP_IN_L
HP_IN_R
HP_DET
AMP_R
AMP_L
7519
BC857B
7520
BC847B
7521
BC847B
MUTE_GENERAL
VC_OUT_RIGHT
VC_OUT_LEFT
7514
BC817-25
7515
BC817-25
7540
BC817-25
7541
BC817-25
RIGHT
LEFT
1255 #
VC_GND
VC_OUT_RIGHT
VC_OUT_LEFT
+12V_A
FE-BT-VK-N
TO/FROM VOICE CONT.
1502
YKC21-3416
SUBWOOFER
OUT
GND_EMC
7522
BC817-25
7523
BC817-25
7524
BC857B
6520
1N4148
HP_IN
HP_DET
# FOR PROVISION ONLY
8239_210_88490 cct 3... 3437 pt 1 dd wk103

COMBI CIRCUIT - CONNECTOR & DIGITAL OUT PART

1260 C9
1261 A9
1262 E7
1263 F9
1264 F9
1265 D11
1266 A8
1267 C1
1268 C2
1504 A1
2570 B5
2596 A3
2597 B5
2598 B2
2599 B3
2600 B5
2601 B3
2602 C4
2603 B2
2604 C2
2605 D2
2606 D3
2607 E2
2608 E2
2609 G5
2610 G6
2611 F8
2642 A11
2643 C13
2647 A4
3372 D13
3373 E13
3622 A4
3623 B2
3624 A5
3625 B4
3626 D2
3627 D2
3628 E2
3630 F2
3631 F2
3632 G2
3633 G2
3634 G3
3635 A3
3636 E1
3644 A11
3647 C14
3648 B14
3649 B13
3650 C13
3651 C13
3652 A4
3653 A4
3654 A2
3655 E10
3656 E10
3670 F6
4502 F11
4503 F11
4506 E10
4507 D10
4508 B11
4509 B5
4510 G2
4511 F3
4512 F4
4513 A3
4514 A3
4515 A5
4518 F4
4519 F4
4557 C2
4558 G3
4559 B5
5501 A3
6330 D14
6511 E1
6512 G6
6513 F1
7328 D13
7525 A4
7526 D3
7527 F2
7528 G2
7529 F6
7553 B12
7555 B13
7556 C12
9050 A11
9545 F6
9629 F1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11
12
13
14
A
B
C
D
E
F
G
3635
220R
4514 #
3654 #
75R
4513 #
1504
YKC21-3416
COAX
DIGITAL
OUT
3623
33R
2598
150p
5501
6RG
2603
100n
2601
220n
2596
1u
2599
100n
7525
74LVU04D
2.78V
VCC
GND
3625
560R
2602
1n
3652
22K
3653
22K
2647 #
47p
GND_D
3622
2K2
3624
470R
4515 #
2597
100n
4509 #
4559 #
100n
2570
2600
220n
COAX2_EBU
COAX1_+3V
EBU_GND
1267
1268
4557 #
100n
2604
GND_D
GND_EMC
FE-BT-VK-N
1266
1261
CD_LEFT
GND_A
CD_RIGHT
+5V_CD
GND_M
+11V_M
SW_INFO
CD_SHR_DATA
CD_SHR_CLK
RAB
DATA
SILD
SICL
GND_D
COAX1_+3V
COAX2_EBU
EBU_GND
GND
EH-B
1260
COAX2
SHIELD
FROM/TO 3DTC
BASIC
FROM/TO 3DTC
9050
11.4V
11.2V
+12V_M
3644 #
47R
+11V_M
2642
470u
GND_M
RAB
4508 #
GND_D
NTC
4.8V
7553
BC847B
7555
BC847B
7556
BC847B
+12V_M
+5V6
3649
15K
3648
6K8
0V
0.7V
0.7V
2643
47u
3650
100K
3651
1K
3647
1K
OCD
GND_D
I2C_DATA
I2C_CLK
3626
470R
3627
470R
2605
100p
2606
100p
7526
M62320FP
CS0
CS1
CS2
CHIP SELECT
I²C BUS
TRANSCEIVER
SHIFT
REG
SCL
SDA
VDD
GND
SO
PWR
RES
OUT I/O IN
DATA LATCHES
I/O PORT
D7
D6
D5
D4
D3
D2
D1
D0
NTC
+5V
3636 #
680R
1N4148
6511
+5V6
3628
220R
5.0V
2607
100n
2608
100n
5.0V
5.6V
5.6V
+5V_CD
6513
1N4003
9629 #
7527
BC327-25
3630
5K6
+5V6
5.0V
3631
5K6
VCD_ON
7528
BC847B
0.7V
3632
2K2
3633
10K
4511 #
4512 #
4518 #
4519
MIC_DET
MUTE_HP
MUTE_GENERAL
AMP_ON
4558 #
3634
1K
CDR_ON
DVD_ON
HP_IN
MUTE_LINE
+5V_CD
4510
+5V_VCD
AMP-ON
MUTE_GENERAL
HP-DET
MUTE_HP
ACTIVE
HI
LO
LO
LO
7529
MC78L05
9545
3670 #
10R
11.7V
5.66V
0.67V
+5V6_CON
2609
100n
6512
1N4148
2610
47u
LOW_PWR_SUPPLY
FROM/TO TUNER
FE-BT-VK-N
1262
TUNER_LEFT
GND_A
TUNER_RIGHT
+12V_A
2611
100n
TU_GND
TU_ENAB
TU_DATA
TU_CLK
TU_STEREO
FROM/TO FRONT
MIC_DET
HP_DET
LOW_POWER_CONTROL
CLIP
POWER_DOWN
SA_IN
1264
1263
FE-BT-VK-N
4507
+5V6_CON
4506 #
+5V6
3655
47K
3656
33K
GND_D
+5V6
4503 #
4502
+12V_A
1265
RAB
DATA
SILD
SICL
SW_INFO
GND_D
CD_SHR_DATA
CD_SHR_CLK
F2
F1
-Vkk
+5V6_CON
GND_D
I2C_CLK
I2C_DATA
GND_D
NTC
FROM/TO FRONT
FE-BT-VK-N
For CDR version only
VCD_ON
7328
BC557B
3372
47K
6330
1N4148
OCD
3373
10K
+5V_VCD
# For Provision only
8239_210_88490 cct 4... 3437 pt 1 dd wk103

ELECTRICAL PARTS LIST - REGULATOR BOARD

MISCELLANEOUS

32	3139 111 01430	Spring Clip I/C
1171	4822 071 51002 ⚠	Fuse T1A 250V

CAPACITORS

2400	4822 124 22652	2,2µF 20% 50V
2402	4822 124 40433	47µF 20% 25V
2405	4822 124 11947	10µF 20% 16V
2406	4822 124 41643	100µF 20% 16V
2407	4822 124 41643	100µF 20% 16V
2408	4822 126 12882	100nF +80/-20% 50V
2409	4822 124 40248	10µF 20% 63V
2410	4822 126 12882	100nF +80/-20% 50V
2411	4822 124 12233	47µF 20% 25V

RESISTORS

3403	4822 050 11002	1k 1% 0,4W
3404	4822 116 52256	2k2 5% 0,5W
3405	4822 116 83876	270R 5% 0,5W
3406	4822 050 11002	1k 1% 0,4W
3411	4822 116 83883	470R 5% 0,5W
3415	4822 116 52199	68R 5% 0,5W
3416	4822 116 52206	120R 5% 0,5W
3417	4822 116 52206	120R 5% 0,5W
3418	4822 117 12063	10k 5% NTC DC 0,5W
3419	4822 116 52219	330R 5% 0,5W
3420	4822 050 11002	1k 1% 0,4W
3421	4822 052 10568	5R6 5% 0,33W
3422	4822 050 21003	10k 1% 0,6W

DIODES

6400	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6405	4822 130 61219	BZX79-B10
6406	4822 130 34174	BZX79-B4V7
6409	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7401	4822 130 40959	BC547B
7402	4822 130 44568	BC557B
7403	9322 139 23687	BDX53BFP
7408	4822 130 40959	BC547B
7409	4822 130 41246	BC327-25
7417	4822 209 31841	L7805CP

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - COMBI BOARD

MISCELLANEOUS

33	3139 111 01430	Spring Clip I/C
1200	4822 267 31176	Loudspeaker Socket
1221	4822 267 10953	Flex Socket 7pin Vert.
1250	4822 267 10953	Flex Socket 7pin Vert.
1256	4822 267 10733	Flex Socket 4pin Vert.
1262	4822 265 11515	Flex Socket 8pin Vert.
1263	2422 025 14518	Flex Socket 9pin Vert.
1265	4822 265 11553	Flex Socket 19pin Vert.
1266	4822 265 11553	Flex Socket 19pin Vert.
1501	4822 265 20553	Aux-in Socket
1502	4822 267 31729	Sub-woofer Socket
1504	4822 267 31729	Digital Out Socket

CAPACITORS

2202	4822 122 33761	22pF 5% 50V
2203	4822 122 33761	22pF 5% 50V
2204	4822 126 12785	47nF +80/-20% 50V
2205	4822 126 12785	47nF +80/-20% 50V
2206	4822 121 42408	220nF 5% 63V
2207	4822 121 42408	220nF 5% 63V
2208	4822 121 42408	220nF 5% 63V
2209	4822 121 42408	220nF 5% 63V
2210	4822 126 12882	100nF +80/-20% 50V
2211	4822 124 81151	22µF 20% 50V
2212	4822 126 12882	100nF +80/-20% 50V
2213	4822 124 81151	22µF 20% 50V
2214	4822 122 10459	560pF 10% 50V
2215	4822 124 40769	4,7µF 20% 100V
2216	4822 124 40769	4,7µF 20% 100V
2217	4822 126 12882	100nF +80/-20% 50V
2500	4822 124 21913	1µF 20% 63V
2501	4822 124 21913	1µF 20% 63V
2502	4822 126 14305	100nF 10% 16V
2503	4822 126 14305	100nF 10% 16V
2504	4822 124 21913	1µF 20% 63V
2505	4822 124 21913	1µF 20% 63V
2508	4822 126 13881	470pF 5% 50V
2509	4822 126 13881	470pF 5% 50V
2510	4822 124 21913	1µF 20% 63V
2511	4822 124 21913	1µF 20% 63V
2518	4822 124 40769	4,7µF 20% 100V
2519	4822 124 40769	4,7µF 20% 100V
2520	4822 126 13881	470pF 5% 50V
2521	4822 126 13881	470pF 5% 50V
2522	4822 126 13881	470pF 5% 50V
2523	4822 126 13881	470pF 5% 50V
2524	4822 126 13881	470pF 5% 50V
2525	4822 126 13881	470pF 5% 50V
2526	4822 126 13881	470pF 5% 50V
2527	4822 126 13881	470pF 5% 50V
2528	5322 122 32261	4,7nF 10% 100V
2529	5322 122 32261	4,7nF 10% 100V
2530	4822 121 42408	220nF 5% 63V
2531	4822 121 42408	220nF 5% 63V
2532	4822 121 51252	470nF 5% 63V
2533	4822 121 51252	470nF 5% 63V
2534	4822 121 51252	470nF 5% 63V
2535	4822 121 51252	470nF 5% 63V
2536	5322 126 11579	3,3nF 10% 63V
2537	5322 126 11579	3,3nF 10% 63V
2538	3198 016 31020	1nF 5% 25V
2539	3198 016 31020	1nF 5% 25V
2540	5322 126 11583	10nF 10% 50V
2541	5322 126 11583	10nF 10% 50V
2542	3198 016 31020	1nF 5% 25V
2543	3198 016 31020	1nF 5% 25V
2544	5322 124 41948	470nF 20% 50V
2545	5322 124 41948	470nF 20% 50V
2547	4822 124 81286	47µF 20% 16V
2548	4822 122 33752	15pF 5% 50V
2549	4822 126 14305	100nF 10% 16V
2551	5322 124 41948	470nF 20% 50V
2559	4822 124 81286	47µF 20% 16V
2560	4822 126 14305	100nF 10% 16V
2561	4822 124 81151	22µF 20% 50V
2562	3198 017 34730	47nF 10% 16V
2563	4822 124 40196	220µF 20% 16V
2565	4822 124 80231	47µF 20% 16V
2566	4822 126 14305	100nF 10% 16V
2567	4822 122 31765	100pF 2% 63V
2568	4822 122 31765	100pF 2% 63V
2570	4822 126 14305	100nF 10% 16V
2571	5322 124 41948	470nF 20% 50V
2572	5322 124 41948	470nF 20% 50V
2573	4822 126 13883	220pF 5% 50V
2574	4822 126 13883	220pF 5% 50V
2575	4822 126 13881	470pF 5% 50V
2576	4822 126 13881	470pF 5% 50V
2577	4822 122 31765	100pF 2% 63V
2578	4822 122 31765	100pF 2% 63V
2579	4822 124 81151	22µF 20% 50V
2580	4822 124 81151	22µF 20% 50V
2581	4822 122 31765	100pF 2% 63V
2582	4822 122 31765	100pF 2% 63V
2585	4822 124 40769	4,7µF 20% 100V
2586	4822 124 40769	4,7µF 20% 100V
2587	3198 017 41050	1µF +80/-20% 10V
2588	4822 122 31765	100pF 2% 63V
2589	4822 126 13881	470pF 5% 50V
2590	4822 124 22833	10µF 20% 50V
2591	4822 124 81286	47µF 20% 16V
2592	4822 126 14494	22nF 10% 25V
2593	4822 124 40207	100µF 20% 25V
2595	4822 124 41796	22µF 20% 16V

CAPACITORS

2596	3198 017 41050	1µF +80/-20% 10V
2597	4822 126 14305	100nF 10% 16V
2598	4822 122 33753	150pF 5% 50V
2599	4822 126 14305	100nF 10% 16V
2600	4822 126 13879	220nF +80/-20% 16V
2601	4822 126 13879	220nF +80/-20% 16V
2602	3198 016 31020	1nF 5% 25V
2603	4822 126 14305	100nF 10% 16V
2604	4822 126 14305	100nF 10% 16V
2605	4822 122 31765	100pF 2% 63V
2606	4822 122 31765	100pF 2% 63V
2607	4822 126 12882	100nF +80/-20% 50V
2608	4822 126 14305	100nF 10% 16V
2609	4822 126 12882	100nF +80/-20% 50V
2610	4822 124 81286	47µF 20% 16V
2611	4822 126 14305	100nF 10% 16V
2614	4822 126 14305	100nF 10% 16V
2615	4822 124 40769	4,7µF 20% 100V
2616	4822 124 40769	4,7µF 20% 100V
2642	4822 124 80791	470µF 20% 16V
2643	4822 124 81286	47µF 20% 16V
2645	4822 126 14305	100nF 10% 16V
2646	3198 017 34730	47nF 10% 16V

RESISTORS

3202	4822 117 12864	82k 5% 0,6W
3203	4822 117 12864	82k 5% 0,6W
3204	4822 051 30562	5k6 5% 0,063W
3205	4822 051 30562	5k6 5% 0,063W
3206	4822 050 21003	10k 1% 0,6W
3207	4822 050 21003	10k 1% 0,6W
3208	4822 050 21003	10k 1% 0,6W
3209	4822 050 21003	10k 1% 0,6W
3210	4822 116 81154	2R2 5% 0,5W
3211	4822 116 81154	2R2 5% 0,5W
3212	4822 116 81154	2R2 5% 0,5W
3213	4822 116 81154	2R2 5% 0,5W
3214	4822 116 52257	22k 5% 0,5W
3215	4822 116 83884	47k 5% 0,5W
3216	4822 116 52244	15k 5% 0,5W
3217	4822 116 52257	22k 5% 0,5W
3218	4822 116 52245	150k 5% 0,5W
3219	4822 116 52175	100R 5% 0,5W
3220	4822 116 83884	47k 5% 0,5W
3221	4822 116 83883	470R 5% 0,5W
3222	4822 116 52283	4k7 5% 0,5W
3223	4822 116 83883	470R 5% 0,5W
3224	4822 116 52219	330R 5% 0,5W
3225	4822 116 52249	1k8 5% 0,5W
3226	4822 116 52249	1k8 5% 0,5W
3227	4822 116 52249	1k8 5% 0,5W
3228	4822 117 13632	100k 1% 0.62W
3229	4822 116 83874	220k 5% 0,5W
3232	4822 051 30103	10k 5% 0,062W
3233	4822 051 30103	10k 5% 0,062W
3234	4822 117 13632	100k 1% 0.62W
3500	4822 051 30102	1k 5% 0,062W
3501	4822 051 30102	1k 5% 0,062W
3502	4822 051 30102	1k 5% 0,062W
3503	4822 051 30102	1k 5% 0,062W
3504	4822 117 12925	47k 1% 0.063W
3505	4822 117 12925	47k 1% 0.063W
3506	4822 117 11817	1k2 1% 1/16W
3507	4822 117 11817	1k2 1% 1/16W
3508	4822 051 30103	10k 5% 0,062W
3509	4822 051 30103	10k 5% 0,062W
3510	4822 051 30222	2k2 5% 0,062W
3511	4822 051 30222	2k2 5% 0,062W
3512	4822 051 30123	12k 5% 0,062W
3513	4822 051 30123	12k 5% 0,062W
3514	4822 051 30153	15k 5% 0,062W
3515	4822 051 30153	15k 5% 0,062W
3524	4822 051 30273	27k 5% 0,062W
3525	4822 051 30273	27k 5% 0,062W
3526	4822 051 30152	1k5 5% 0,062W
3527	4822 051 30152	1k5 5% 0,062W
3530	4822 117 12902	8k2 1% 0.063W
3531	4822 117 12902	8k2 1% 0.063W
3532	4822 051 30562	5k6 5% 0,063W
3533	4822 051 30562	5k6 5% 0,063W
3534	4822 051 30183	18k 5% 0,062W
3535	4822 051 30183	18k 5% 0,062W
3536	4822 051 30103	10k 5% 0,062W
3537	4822 051 30103	10k 5% 0,062W
3538	4822 051 30221	220R 5% 0,062W
3539	4822 051 30221	220R 5% 0,062W
3541	4822 051 30562	5k6 5% 0,063W
3542	4822 051 30562	5k6 5% 0,063W
3543	4822 117 12925	47k 1% 0.063W
3544	4822 117 12925	47k 1% 0.063W
3545	4822 051 30333	33k 5% 0,062W
3546	4822 051 30333	33k 5% 0,062W
3547	4822 051 30154	150k 5% 0,062W
3548	4822 051 30154	150k 5% 0,062W
3550	4822 116 83868	150R 5% 0,5W
3552	4822 051 30391	390R 5% 0,062W
3557	4822 117 11817	1k2 1% 1/16W
3558	4822 051 30334	330k 5% 0,062W
3559	4822 117 12864	82k 5% 0,6W
3566	4822 116 52289	5k6 5% 0,5W
3567	4822 051 30221	220R 5% 0,062W
3569	4822 051 30102	1k 5% 0,062W
3571	4822 051 30102	1k 5% 0,062W
3572	4822 051 30102	1k 5% 0,062W

3573	4822 051 30109	10R 5% 0,062W
3574	4822 051 30109	10R 5% 0,062W
3575	4822 051 30123	12k 5% 0,062W
3576	4822 051 30123	12k 5% 0,062W
3579	4822 051 30682	6k8 5% 0,062W
3580	4822 051 30682	6k8 5% 0,062W
3581	4822 051 30273	27k 5% 0,062W
3582	4822 051 30273	27k 5% 0,062W
3583	4822 051 30332	3k3 5% 0,062W
3584	4822 051 30332	3k3 5% 0,062W
3587	4822 051 30339	33R 5% 0,062W
3588	4822 051 30339	33R 5% 0,062W
3589	4822 051 30479	47R 5% 0,062W
3590	4822 051 30479	47R 5% 0,062W
3591	4822 051 30102	1k 5% 0,062W
3592	4822 051 30102	1k 5% 0,062W
3593	4822 051 30102	1k 5% 0,062W
3594	4822 051 30102	1k 5% 0,062W
3595	4822 051 30102	1k 5% 0,062W
3596	4822 051 30102	1k 5% 0,062W
3598	4822 051 30102	1k 5% 0,062W
3599	4822 051 30562	5k6 5% 0,063W
3600	4822 051 30472	4k7 5% 0,062W
3601	4822 050 21003	10k 1% 0,6W
3602	4822 051 30103	10k 5% 0,062W
3604	4822 051 30102	1k 5% 0,062W
3605	4822 051 30562	5k6 5% 0,063W
3606	4822 050 21003	10k 1% 0,6W
3607	4822 051 30472	4k7 5% 0,062W
3609	4822 051 30103	10k 5% 0,062W
3610	4822 051 30153	15k 5% 0,062W
3611	4822 051 30562	5k6 5% 0,063W
3612	4822 051 30221	220R 5% 0,062W
3614	4822 051 30222	2k2 5% 0,062W
3615	4822 116 52283	4k7 5% 0,5W
3616	4822 116 52256	2k2 5% 0,5W
3617	4822 051 30102	1k 5% 0,062W
3618	4822 051 30102	1k 5% 0,062W
3619	4822 052 10109 ⚠	10R 5% 0,33W
3620	4822 116 52283	4k7 5% 0,5W
3621	4822 051 30472	4k7 5% 0,062W
3622	4822 051 30222	2k2 5% 0,062W
3623	4822 051 30339	33R 5% 0,062W
3624	4822 051 30471	470R 5% 0,062W
3625	4822 051 30561	560R 5% 0,062W
3626	4822 051 30471	470R 5% 0,062W
3627	4822 051 30471	470R 5% 0,062W
3628	4822 116 83872	220R 5% 0,5W
3630	4822 051 30562	5k6 5% 0,063W
3631	4822 051 30562	5k6 5% 0,063W
3632	4822 051 30222	2k2 5% 0,062W
3633	4822 051 30103	10k 5% 0,062W
3634	4822 051 30102	1k 5% 0,062W
3635	4822 116 83872	220R 5% 0,5W
3641	4822 051 30102	1k 5% 0,062W
3642	4822 051 30102	1k 5% 0,062W
3643	4822 051 30102	1k 5% 0,062W
3645	4822 051 30221	220R 5% 0,062W
3646	4822 051 30102	1k 5% 0,062W
3647	4822 051 30102	1k 5% 0,062W
3648	4822 051 30682	6k8 5% 0,062W
3649	4822 051 30153	15k 5% 0,062W
3650	4822 117 13632	100k 1% 0.62W
3651	4822 051 30102	1k 5% 0,062W
3652	4822 051 30223	22k 5% 0,062W
3653	4822 051 30223	22k 5% 0,062W
3655	4822 117 12925	47k 1% 0.063W
3656	4822 051 30333	33k 5% 0,062W
4502	4822 051 20008	0R Jumper 0805
4507	4822 051 20008	0R Jumper 0805
4510	4822 051 20008	0R Jumper 0805
4519	4822 051 20008	0R Jumper 0805
4531	4822 051 20008	0R Jumper 0805
4532	4822 051 20008	0R Jumper 0805
4533	4822 051 20008	0R Jumper 0805
4534	4822 051 20008	0R Jumper 0805
4536	4822 051 20008	0R Jumper 0805
4537	4822 051 20008	0R Jumper 0805
4538	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4540	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4542	4822 051 20008	0R Jumper 0805
4543	4822 051 20008	0R Jumper 0805
4545	4822 051 20008	0R Jumper 0805
4546	4822 051 20008	0R Jumper 0805
4547	4822 051 20008	0R Jumper 0805
4548	4822 051 20008	0R Jumper 0805
4550	4822 051 20008	0R Jumper 0805
4551	4822 051 20008	0R Jumper 0805
4552	4822 051 20008	0R Jumper 0805
4553	4822 051 20008	0R Jumper 0805
4554	4822 051 20008	0R Jumper 0805
4555	4822 051 20008	0R Jumper 0805
4560	4822 051 20008	0R Jumper 0805
4561	4822 051 20008	0R Jumper 0805
4562	4822 051 20008	0R Jumper 0805
4563	4822 051 20008	0R Jumper 0805
4564	4822 051 20008	0R Jumper 0805
4565	4822 051 20008	0R Jumper 0805
4567	4822 051 20008	0R Jumper 0805
4568	4822 051 20008	0R Jumper 0805
4569	4822 051 20008	0R Jumper 0805
4570	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - COMBI BOARD

RESISTORS

4571	4822 051 20008	0R Jumper 0805
4572	4822 051 20008	0R Jumper 0805
4573	4822 051 20008	0R Jumper 0805
4575	4822 051 20008	0R Jumper 0805
4576	4822 051 20008	0R Jumper 0805
4577	4822 051 20008	0R Jumper 0805
4578	4822 051 20008	0R Jumper 0805
4579	4822 051 20008	0R Jumper 0805
4580	4822 051 20008	0R Jumper 0805
4581	4822 051 20008	0R Jumper 0805
4582	4822 051 20008	0R Jumper 0805
4583	4822 051 20008	0R Jumper 0805
4584	4822 051 20008	0R Jumper 0805
4585	4822 051 20008	0R Jumper 0805
4586	4822 051 20008	0R Jumper 0805
4587	4822 051 20008	0R Jumper 0805
4588	4822 051 20008	0R Jumper 0805
4589	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5200	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5201	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5202	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5203	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5500	4822 157 62552	Coil 2,2µH 5%
5501	2422 536 00019	Transformer 6RG

DIODES

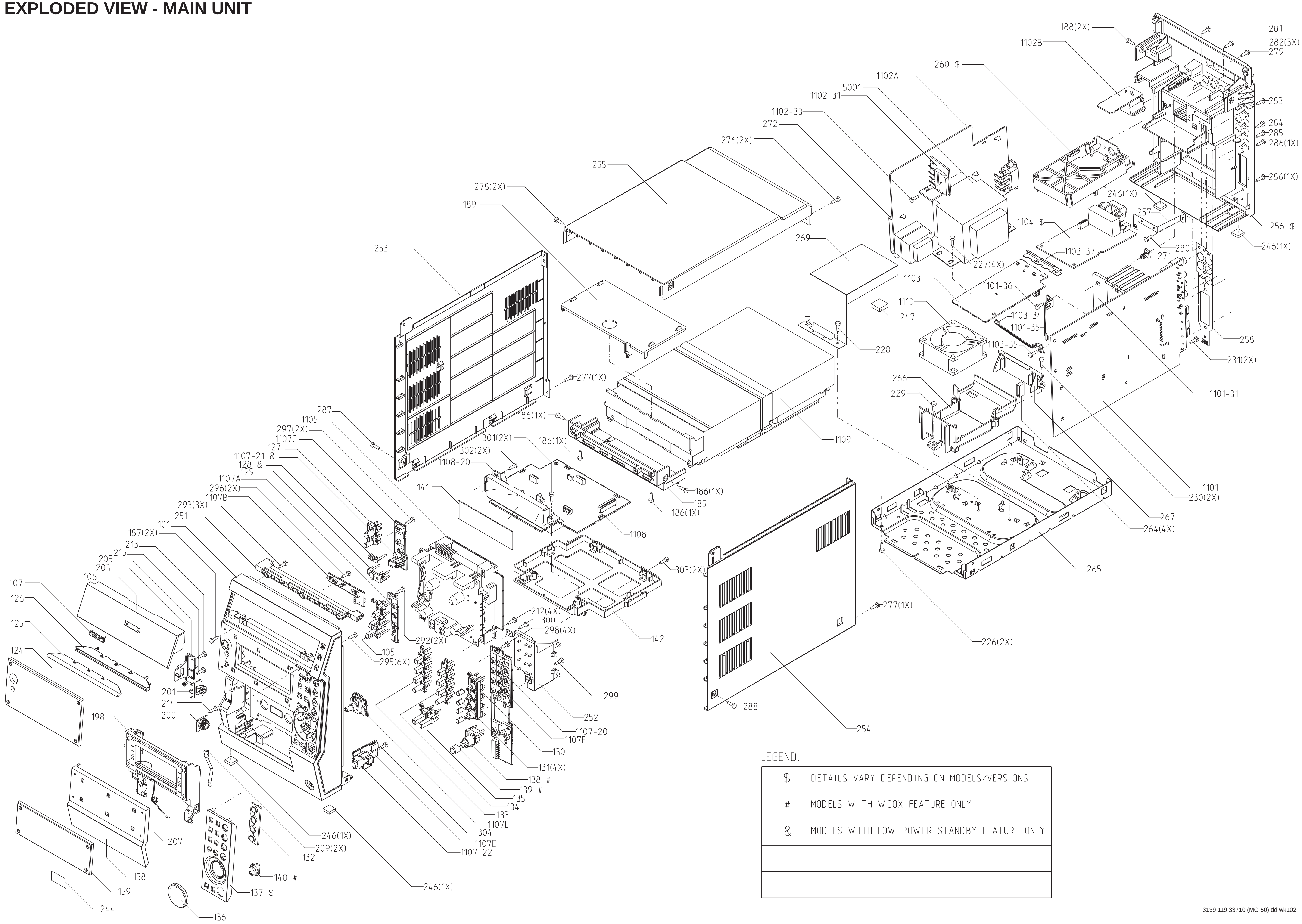
6200	4822 130 31878	1N4003G
6201	4822 130 31878	1N4003G
6202	4822 130 31878	1N4003G
6203	4822 130 31878	1N4003G
6204	9340 550 66112	BYV28-200/24
6205	4822 130 34441	BZX79-B22
6206	4822 130 30621	1N4148
6207	4822 130 34174	BZX79-B4V7
6208	4822 130 31024	BZX79-B18
6209	4822 130 34174	BZX79-B4V7
6508	4822 130 61219	BZX79-B10
6509	4822 130 30621	1N4148
6510	4822 130 30862	BZX79-B9V1
6511	4822 130 30621	1N4148
6512	4822 130 30621	1N4148
6513	4822 130 31878	1N4003G
6520	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7200	9322 133 18682	AN7125P
7201	4822 130 44568	BC557B
7202	4822 130 44568	BC557B
7203	4822 130 40959	BC547B
7204	4822 130 10847	BDW94C
7205	4822 130 40959	BC547B
7206	4822 130 44568	BC557B
7506	4822 130 60373	BC857B
7507	4822 130 60511	BC847B
7509	4822 130 60511	BC847B
7510	4822 209 31378	NJM4556MB
7511	4822 130 42804	BC817-25
7512	4822 130 42804	BC817-25
7514	4822 130 42804	BC817-25
7515	4822 130 42804	BC817-25
7516	4822 130 60373	BC857B
7517	4822 130 60511	BC847B
7518	4822 130 60511	BC847B
7519	4822 130 60373	BC857B
7520	4822 130 60511	BC847B
7521	4822 130 60511	BC847B
7522	4822 130 42804	BC817-25
7523	4822 130 42804	BC817-25
7524	4822 130 60373	BC857B
7525	4822 209 17235	74LVU04D
7526	4822 209 17345	M62320FP
7527	4822 130 41246	BC327-25
7528	4822 130 60511	BC847B
7529	4822 209 72042	MC78L05ACP
7540	4822 130 42804	BC817-25
7541	4822 130 42804	BC817-25
7550	9322 150 74668	TDA7468D
7553	4822 130 60511	BC847B
7555	4822 130 60511	BC847B
7556	4822 130 60511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.

EXPLODED VIEW - MAIN UNIT


188(2X)
281
282(3X)
279
1102B
260 $
1102A
5001
1102-31
1102-33
272
276(2X)
283
284
285
286(1X)
286(1X)
255
278(2X)
189
246(1X)
257
256 $
1104 $
246(1X)
280
271
253
269
1103-37
227(4X)
1103
1101-36
1110
247
1103-34
1101-35
258
231(2X)
1103-35
228
277(1X)
266
229
1101-31
287
1105
297(2X)
1107C
127
1107-21 &
128 &
129
1107A
296(2X)
1107B
293(3X)
251
101
187(2X)
213
215
205
203
106
107
126
125
124
186(1X)
301(2X)
186(1X)
302(2X)
1108-20
1109
141
186(1X)
185
186(1X)
1108
1101
230(2X)
267
264(4X)
265
303(2X)
142
212(4X)
300
298(4X)
292(2X)
105
295(6X)
277(1X)
226(2X)
299
252
1107-20
1107F
130
131(4X)
138 #
139 #
135
134
133
1107E
304
1107D
1107-22
288
254
201
214
200
198
207
246(1X)
209(2X)
132
140 #
137 $
136
158
159
244
246(1X)

LEGEND:

$	DETAILS VARY DEPENDING ON MODELS/VERSIONS
#	MODELS WITH WOOX FEATURE ONLY
&	MODELS WITH LOW POWER STANDBY FEATURE ONLY

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

101	3139 118 14890	Cabinet Front /22
101	3139 118 15150	Cabinet Front /37
105	3139 118 14920	Button Set DTC Chrome
106	3139 118 14910	Cover Tray DTC
107	4822 459 11086	Badge Assembly Philips
124	3139 118 15030	Window Display /22
124	3139 118 15160	Window Display /37
125	3139 114 71610	Lightguide Wash
126	3139 114 71620	Housing Lightguide Wash
127	3139 118 15010	Button Set Power Chrome
130	3139 114 71770	Button Set Source
131	3139 118 14990	Cap Source Micro Chrome
133	3139 118 14960	Button Set Control Left
134	3139 118 14970	Button Set Control Right
135	3139 118 14980	Button Set Treble/Bass
136	3139 118 14950	Knob Jog Chrome
137	3139 118 14930	Cover Display
141	3139 113 27010	Filter Blue
158	3139 118 15020	Cover Cassette
159	3139 118 15050	Window Cassette
189 *	3139 118 15780	Plate Transport DTC
198	3139 114 68620	Door Cassette Left
200	4822 529 10322	Damper Assembly
201	3139 114 68640	Push Catch Left
203	4822 492 11344	Spring Compression
205	4822 402 11245	Bracket Left
207	3139 111 01390	Spring Torsion Left
209	4822 492 42787	Spring Cassette
246	3139 113 27140	Foot Rubber (SQ) 4mm
252	3139 114 71560	Bracket Combi
253	3139 114 71510	Panel Left Micro
254	3139 114 71520	Panel Right Micro
255	3139 114 71530	Cover Top Micro
256	3139 114 71490	Panel Rear Micro
271	3139 114 71010	Stopper Heatsink
350	3139 118 78510	Loudspeaker Box /22
350	3139 118 78500	Loudspeaker Box /37
	9965 000 07825	Loud. Cloth Frame assembly
351	4822 303 50063	FM Aerial /22
351	4822 303 11094	FM Antenna Wire /37
356	3139 118 78610	Remote Control /22
356	3139 118 78620	Remote Control /37
384	4822 303 50082	AM Frame
385	4822 321 10249 ⚠	Mains Cord /22
385	4822 321 11466 ⚠	Mains Cord /37
387	3139 115 20740	Instruction For Use /22
387	3139 115 20750	Instruction For Use /37
1110	4822 361 11161	Cooling Fan KD1206PTS3
1131	3139 110 35560	Flex Cable 19pin 18cm AD
1133	3139 110 35570	Flex Cable 9pin 10cm AD
1134	3139 110 35240	Flex Cable 8pin 28cm AD
1135	3139 110 35230	Flex Cable 7pin 22cm AD
1136	4822 320 12752	Flex Cable 7pin 18cm AD
1137	3139 110 35250	Flex Cable 4pin 12cm AD
1138	3139 110 35520	Flex Cable 19pin 10cm AD
1141	4822 320 12752	Flex Cable 7pin 18cm AD
1142	3139 110 34610	Flex Cable 11pin 18cm AD
1143	3139 110 34950	Flex Cable 07p/120/07p Ad
5001	3139 118 32340 ⚠	Mains Transformer /22
5001	3139 118 32330 ⚠	Mains Transformer /37

Note: Only the parts mentioned in this list are normal service spare parts.

* Pos 189 is used for transportation only, it must be removed before playing CD.

SCREW LISTS - MAIN UNIT

186	D3 x 10
187	D3 x 10
188	D3 x 10
212	D3 x 12
213	D3 x 12
214	D3 x 12
215	D3 x 12
226	M3 x 6
227	M3 x 6
228	M3 x 6
229	M3 x 6
230	D3 x 10
231	M3 x 10
276	D3 x 12
277	M3 x 10
278	D3 x 10
279	D3 x 16
280	D3 x 8
281	D3 x 10
282	D3 x 10
283	D3 x 10
284	D3 x 10
285	D3 x 10
286	D3 x 10
287	D3 x 10
288	D3 x 10
292	D3 x 10
293	D3 x 20
295	D2 x 8
296	D3 x 10
297	D3 x 10
298	D3 x 10
299	D3 x 10
300	D3 x 10
301	D3 x 10
302	D3 x 10
303	D3 x 10
304	D3 x 12
1101-34	D3 x 10
1101-36	D3 x 10
1102-33	D3 x 10
1103-33	D3 x 10
1103-35	D3 x 10